



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
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STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

March 15, 2022
Honolulu, O‘ahu

Address Portions of CDR.5310.4 by
Amending the Interim Instream Flow Standards
For the Surface Water Hydrologic Units of
Kawela (4037), Kaunakakai (4039), and Manawainui (4041), Moloka‘i

SUMMARY OF REQUEST

Staff is requesting that the Commission consider the recommendations for amending the interim instream flow standard (interim IFS) for three streams in the Kawela surface water hydrologic unit, one stream in the Kaunakakai surface water hydrologic unit, and two streams in the Manawainui surface water hydrologic unit and the abandonment of three diversions in these hydrologic units, Moloka‘i:

KAWELA HYDROLOGIC UNIT (4037): East Kawela Stream, East Kawela Tributary Stream, and West Kawela Stream

KAUNAKAKAI HYDROLOGIC UNIT (4039): Left Branch South Fork Kaunakakai Stream at Kamoku Intake

MANAWAINUI HYDROLOGIC UNIT (4041): SF Kuhuaawi Stream at Lualohe Intake, SF Kuhuaawi Stream at Kalihi Intake

LOCATION MAP See Exhibit 1

LEGAL AUTHORITY

The Code provides that the Commission may adopt interim IFS on a stream-by-stream basis or a general IFS applicable to all streams within a specified area. In the 2000 appellate ruling on the first Waiāhole Ditch Contested Case Decision and Order (“*Waiāhole I*”), the Hawai‘i Supreme Court emphasized that “instream flow standards serve as the primary mechanism by which the Commission is to discharge its duty to protect and promote the entire range of public trust

purposes dependent upon instream flows.” 94 Haw. 97, 148, 9 P.3d 409, 460. This submittal is proposing to address interim IFS on six streams in Moloka'i.

The current interim IFS for the streams being considered were established by way of Hawai'i Administrative Rules (HAR) §13-169-48, which, in pertinent part, reads as follows:

Interim instream flow standard for Molokai. *The Interim Instream Flow Standard for all streams on Molokai, as adopted by the Commission on Water Resource Management on June 15, 1988, shall be that amount of water flowing in each stream on the effective date of this standard, and as that flow may naturally vary throughout the year and from year to year without further amounts of water being diverted off stream through new or expanded diversions, and under the stream conditions existing on the effective date of the standard.*

The current interim IFS effective date was October 8, 1988. Thus, the status quo interim IFS, in effect, grandfathered all then-existing diversions that were registered with the Commission by May 31, 1989. Following the initial registration of stream diversion works, any new or substantially modified stream diversion works required a permit for construction as well as an amendment to the interim IFS. Molokai Ranch filed for the registration of seven stream diversions.

The Code defines an instream flow standard as a “quantity or flow of water or depth of water which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses.” See HRS § 174C-3 (“Definitions”).

“Instream use” means beneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited to:

- 1) Maintenance of fish and wildlife habitats;
- 2) Outdoor recreational activities;
- 3) Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation;
- 4) Aesthetic values such as waterfalls and scenic waterways;
- 5) Navigation;
- 6) Instream hydropower generation;
- 7) Maintenance of water quality;
- 8) The conveyance of irrigation and domestic water supplies to downstream points of diversion; and
- 9) The protection of traditional and customary Hawaiian rights.

In considering a petition to amend an interim instream flow standard, the Code directs the Commission to “weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for noninstream purposes, including the economic impact of restricting such uses.” HRS § 174C-71(2)(D).

“Noninstream use” means the use of stream water that is diverted or removed from its stream channel and includes the use of stream water outside of the channel for domestic, agricultural, and industrial purposes.

Since the establishment of the Stream Protection and Management Branch in July 2002, the Commission has developed a framework for setting measurable instream flow standards statewide. This framework involves an assessment of natural flow conditions for the current climate period, an analysis of the instream uses protected by the State Water Code, the existing and planned uses of water, and the availability of water from multiple sources. The analysis for establishing interim IFS incorporates a balancing of the public trust uses with reasonable and beneficial uses. The primary cultural practices affected by changing hydrology is the gathering of limu and nearshore species, the gathering of medicinal and culturally important plants in the higher elevations, the operation of loko i'a, the right to a continual flow of water for pule. There is much interest in restoring groundwater recharge via downstream flows to protect springflow at the mouth of Kawela. Reductions in streamflow have also limited the availability of habitat for native aquatic biota including amphidromous species and the protection of habitat for endemic damselflies, some of which are threatened or endangered. In *McBryde Sugar Co v. Robinson*, the Hawai'i Supreme Court identified riparian rights as “the right to use water flowing without prejudicing the riparian rights of others and the right to the natural flow of the stream without substantial diminution in the shape and size given it by nature”. 54 Haw. at 198, 504 P.2d at 1344. 54 Haw. 174, 504 P.2d 1330. Further, the Hawai'i Supreme Court affirmed the unity of the hydrological cycle such that surface and groundwater represent an integrated source of water, and “where surface and groundwater can be demonstrated to be interrelated as parts of a single system, established surface water rights may be protected against diversions that injure those rights whether the diversion is of surface water or groundwater.” *Reppun v. Board of Water Supply*, 65 Haw. at 531, 656 P.2d 57 at 79.

The public trust is a state constitutional doctrine which “continues to inform the Code’s interpretation, define its permissible ‘outer limits,’ and justify its existence...(T)he Code does not supplant the protections of the public trust doctrine.” *Waiāhole I*, 94 Hawai'i at 133, 9 P.3d at 445. The State Supreme Court has described “the public trust relating to water resources as the authority and duty ‘to maintain the purity and flow of our waters for future generations and to assure that the waters of our land are put to reasonable and beneficial uses (*emphases in original*).” *Waiāhole I*, 94 Hawai'i at 138, 9 P.3d at 450. “‘Reasonable-beneficial use’ means the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest.” HRS § 174C-3.

The Hawai'i Constitution requires the Commission both to protect natural resources and to promote their use and development. “The state water resources trust thus embodies a dual mandate of 1) protection and 2) maximum reasonable and beneficial use.” *Waiāhole I*, 94 Hawai'i at 139, 9 P.3d at 451. The purposes or protected uses of the water resources trust are: 1) maintenance of waters in their natural state, 2) domestic water use of the general public, in particular, protecting an adequate supply of drinking water, 3) the use of water in the exercise of Native Hawaiian traditional and customary rights, and 4) the reservation of water enumerated by

the State Water Code. *Waiāhole I*, 94 Hawai'i at 136-37, 9 P.3d at 448-58; *In re Wai'ola o Moloka'i, Inc.* ("Wai'ola"), 103 Hawai'i 401, 431, 83 P.3d 664, 694 (2004).

"In this jurisdiction, the water resources trust also encompasses a duty to promote the reasonable and beneficial use of water resources in order to maximize their social and economic benefits to the people of the state...(We) have indicated a preference for accommodating both instream and offstream uses where feasible...(and) reason and necessity dictate that the public trust may have to accommodate offstream diversions inconsistent with the mandate of protection, to the unavoidable impairment of public instream uses and values." *Waiāhole I*, 94 Hawai'i at 139, 141-42, 9 P.3d at 451, 453-54.

There are no absolute priorities under the Public Trust Doctrine. "Given the diverse and not necessarily complementary range of water uses, even among public trust uses alone, (the Court) consider(s) it neither feasible nor prudent to designate absolute priorities between broad categories of uses under the water resources trust. There are no absolute priorities between uses under the water resources trust...(and) the Commission inevitably must weigh competing public and private water uses on a case-by-case basis, according to any appropriate standards provided by law (emphasis added)." *Waiāhole I*, 94 Hawai'i at 142, 9 P.3d at 454. The public trust creates an affirmative duty of the Commission "to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible¹ (emphasis added)." *Waiāhole I*, 94 Hawai'i at 141, 9 P.3d at 453.

The water code does not place a burden of proof on any particular party; instead, the water code and case law interpreting the code have affirmed the Commission's duty to establish interim IFS that 'protect instream values to the extent practicable' and 'protect the public interest.'" *In re 'Īao Ground Water Management Area High-Level Surface Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waihe'e River and Waiehu, 'Īao, and Waikapu Streams Contested Case Hearing* ("Nā Wai 'Ehā"), 128 Hawai'i 228, 258, 287 P.3d 129, 159 (2012)), citing *In re Water Use Permit Applications* ("Waiāhole IP"), 105 Hawai'i 1, 11, 93 P.3d 643, 653 ((2004)); and HRS §174C-71((2))(A)). In setting an interim IFS, the Commission "need only reasonably estimate instream and offstream demands." *Nā Wai 'Ehā*, 128 Hawai'i at 258, 287 P.3d at 159 (2012)); "*Waiāhole I*", 94 Hawai'i at 155 n. 60, 9 P.3d at 467 n. 60. "In requiring the Commission to establish instream flow standards at an early planning stage, the Code contemplates the designation of the standards based not only on scientifically proven facts, but also on future predictions, generalized assumptions, and policy judgments." *Waiāhole I*, 94 Hawai'i at 155, 9 P.3d at 467.

Further, Article 12, §7 of the Hawai'i Constitution states that: "The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights."

¹ The Court refers to the term "feasible" as a balancing of benefits and costs and not to mean "capable of achievement." (*Waiāhole I*, 94 Hawai'i, at 141 n. 39; 9 P.3d, at 453 n. 39.)

Where scientific evidence is preliminary and not yet conclusive regarding the management of fresh water resources, it is prudent to adopt the "precautionary principles" in protecting the resource². That is, where there are present or potential threats of serious damage, lack of full scientific certainty should not be a basis for postponing effective measures to prevent environmental degradation...In addition, where uncertainty exists, a trustee's duty to protect the resource mitigates in favor of choosing presumptions that also protect the resource.³ The "precautionary principle" appears in diverse forms throughout the field of environmental law... The Hawai'i Supreme Court confirmed that the principle, in its quintessential form, states: at minimum, the absence of firm scientific proof should not tie the Commission's hands in adopting reasonable measures designed to further the public interest. "*Waiāhole I*", 94 Hawai'i at 155 n. 60 p.13.

Based upon the best available information presented in the Instream Flow Stream Assessment Report (IFSAR), along with the oral and written comments received through the public review process and provided in the informational submittal presented to the Commission at the regularly scheduled meeting on February 15, 2022 (see Exhibit 2), staff have developed a recommendation that seeks to balance public trust uses and the reasonable and beneficial needs of non-public trust uses. This process is challenging due to the unique nature of each stream, the various instream and noninstream uses of water, and the logistical challenges of instituting an interim IFS. Whether attempting to compare stream characteristics across multiple hydrologic units or within one unit, no single principal or equation determines the rate of flow restoration. However, the principals established by the State Constitution, the laws dictating the Hawai'i State Water Code (HRS chapter 174C), and the statutes which are used to implement these laws (HRS) are applied equally.

The State Water Code (Code), Chapter 174C, Hawaii Revised Statutes (HRS), provides that the Commission shall have jurisdiction statewide to hear any dispute regarding water resource protection, water permits, or constitutionally or otherwise legally protected water interests. HRS §13-167-23. If any person files a complaint with the Commission that any other person is wasting or polluting water, or is making a diversion, withdrawal, impoundment, consumptive use of waters or any other activity occurring without a permit where one is required, the Commission shall cause an investigation to be made, take appropriate action, and notify the complainant thereof. HRS §13-167-82. Further, the Commission may take jurisdiction of and resolve any disputes regarding water resource protection, water permits, or constitutionally protected water interests. HRS §13-167-3(4).

Understanding that the availability of hydrologic data in these streams is limited, as new data are developed, decisions may be revised by a future Commission action. Due to the complex and dynamic nature of Hawai'i's stream systems, adaptive management affords staff the ability to proceed in making reasonable management decisions and ensuring that impacts are minimized in the face of uncertainty, thus allowing staff to proceed responsibly while advancing the clear intentions of the Code.

² Commission on Water Resource Management. 1997. In the Matter of Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiāhole Ditch Combined Contested Case Hearing. Final Decision & Order. CCH-OA-95-01.

³ Ibid.

SUMMARY OF DATA

The Moloka‘i community frequents the perennial portions of the streams in the Kawela, Kaunakakai, and Manawainui hydrologic units for their recreational and aesthetic values and to carry out traditional and cultural practices that include the gathering of medicinal and culturally important riparian plants. Further, freshwater flowing as springs in the Kawela hydrologic unit supports culturally important fishing and gathering practices along the coastline, including nearshore species for subsistence, the gathering of varieties of limu, and the management of loko pu‘uone and loko kuapa, variations of loko i‘a found near Kawela. Historically, Kawela was famous as a place of “Pu‘uhonua”, a special refuge and safety for the island of Moloka‘i. Kawela supported a large population center and the stream ranked outstanding (4 of 4) for its cultural values by the Hawaii Stream Assessment. Fishing, hunting, and gathering are prevalent subsistence practices. The community also perpetuates religious and spiritual traditions. For example, Kawela features prominently in pule, while others gather fresh water for ho‘okupu. A summary of these practices is provided in Table 1. These practices, and their ecological resources, necessitate a continual flow of water that supports the persistence of aquatic and riparian biota.

Table 1. Summary of cultural practices and resources associated with Kawela, Kaunakakai, and Manawainui hydrologic units.

Cultural Practice	Cultural Resource	Area/Location
Fishing	‘o‘opu	in stream
	wī	ma uka
	prawn	muliwai
	‘ōpae	
	‘anae	
	pāpa‘i	
	hinana	
Gathering & Fishing	‘ohe for hina‘i	ma uka
	‘ie‘ie for hina‘i	
Gathering	pōhaku to make papa ku‘i ‘ai	ma uka along stream
	wai, for ho‘okupu, i.e., for makahiki	ma uka
	maile	
	mokihana	
	ohia for makaha	
	hulu manu	
Gathering & Lā‘au Lapa‘au (Hawaiian medicine)	‘ōlena	ma uka
	‘ie‘ie for treatment of ‘ea and pa‘ao‘ao	
	koali	
	kukui	
	noni	ma uka & along kuāuna
Lei	palapalai	ma uka
	maile	
	mokihana	
	nā‘ū	
	hāpu‘u	
	pepeiao	
Preparing/eating food	‘uala, mai‘a, ‘ulu, kō	hale

In 1987, with the passage of the State Water Code, all wells and stream diversions had to be registered with the Commission by May 31, 1989. Registered diversions accepted by the Commission in the hydrologic units considered here are listed in Table 2. The only stream diversions in the Kawela, Kaunakakai, and Manawainui hydrologic units were registered by Molokai Ranch (File Reference: MOLOKAI RANCH).

Table 2. Registration ID, diversion ID, diversion name, stream name, and additional information for stream diversions to the Mountain Water System, Moloka'i.

Hydrologic Unit	Registrant	Diversion ID	Diversion name	Stream name	1992 ¹ Quantity Diverted (mgd)	Additional information
Kawela	MOLOKAI RANCH	867	East Kawela	East Kawela	0.562	Main Kawela intake
Kawela	MOLOKAI RANCH	866	East Kawela Tributary	Unnamed Tributary to East Kawela	0.067	Diverted flow transported by pipeline to East Kawela above intake
Kawela	MOLOKAI RANCH	862	West Kawela	West Kawela	0.067	Diverted flow transported by pipeline to junction with East Kawela pipeline
Kaunakakai	MOLOKAI RANCH	865	Kamoku	SF Kaunakakai	0.071	Diverted flow transported by pipeline to junction with Kawela pipeline
Waikolu	MOLOKAI RANCH	864	Hanalilolilo	Waikolu	0.130	Diverted flow transported by pipeline to junction with Kawela pipeline
Manawainui	MOLOKAI RANCH	863	Loalohe	SF Kuhuaawi	0.270	Diverted flow transported by pipeline to junction with Ranch Line
Manawainui	MOLOKAI RANCH	868	Kalihi	SF Kuhuaawi	0.071	Diverted flow transported by pipeline to junction with Ranch Line

¹based on field notes and calculations from site visits in 1992 and 1993.

On July 1, 2019, Earthjustice, on behalf of No Ka Heke, filed a petition to amend the interim IFS on seven streams and a waste complaint against Molokai Properties, the new owner of Molokai Ranch.

The Mountain Water System consists of three diversions in the Kawela hydrologic unit (Figure 1), one diversion in the Kaunakakai hydrologic unit (Exhibit 1), one diversion in the Waikolu hydrologic unit (Exhibit 1), and two diversions in the Manawainui hydrologic unit (Figure 2). A summary of the mountain water sources as described in 1982 is provided in Table 3. No meters existed until Molokai Ranch installed one above the first reservoir and on the pipeline from the Hanalilolilo intake in the 1990s. The interconnected relationship among diversions, streams, pipelines, and meters is provided in Figure 3.

Table 3. Historic statistics of the Molokai Ranch mountain water system. [All flows in million gallons per day, mgd]

1982 Estimates ⁴				Reported 2000-02, 2004-05, 2019-P			
Ranch Line	Drainage Area (mi ²)	Minimum Flow	Maximum divertible flow	Mean daily flow	Q ₅₀	Q ₇₀	Q ₉₀
East Kawela ¹	0.52	0.52	0.50	0.224	0.223	0.113	0.021
West Kawela	0.086	0.000	0.10	not in use			
Kamoku Gulch	0.13	0.015	0.15	not in use			
Hanalilolilo (Waikolu)	0.11	0.015	0.15	0.122	0.095	0.050	0.001
Dole Line							
Lualohe Gulch ²	0.23	0.00	0.10	0.139	0.118	0.059	0.040
Kalihi Gulch ²	0.10	0.00	0.07	0.053	0.012	0.008	0.001
1982 total		0.11	0.7-0.8				
2000-02, 2004-05 total				0.690	0.601	0.460	0.350
2019-Present total				0.372	0.373	0.189	0.023

¹it is not clear if the East Kawela Tributary intake was active during any of this reporting

²intakes have been inactive since 2005; data reflect only flows diverted when active

Since 2015, staff have made 27 site visits to Moloka‘i to investigate Waikolu, Kaunakakai, Manawainui, and Kawela hydrologic units as detailed in Exhibit 3.

At an informational briefing presented to the Commission at the regularly scheduled Commission meeting February 15, 2022 (Exhibit 12), the Commission received substantial testimony in support of the establishment of interim IFS (Exhibit 13). Many community members requested that the interim IFS be increased to a value greater than the Q₈₀. In response, Commission staff are recommending a balance of use that protects public trust uses, including the maintenance of water in its natural state, water for traditional and customary practices, and water for DHHL, with the reasonable water needs of noninstream uses. There is sufficient evidence regarding the instream values of these streams to recommend establishing a measurable interim IFS. Recognized instream uses within the Kaunakakai, Manawainui, and Kawela hydrologic units include the recreational and aesthetic values of the streams, the traditional gathering practices of riparian vegetation, principal habitat for aquatic biota, the high density of threatened and endangered plant species, hunting practices, and the ecological value of groundwater recharge provided by increased downstream flow from the upper member East Molokai Volcanics to the lower member East Molokai Volcanics.

⁴Tom Nance. 1982. Molokai Water Systems Plan. Prepared for the Maui County Department of Water Supply. Belt Collins, & Associates.

Figure 1. Registered diversions (ID) and ditches/pipelines identified in the Kawela hydrologic unit as part of the Mountain Water System, Moloka'i.

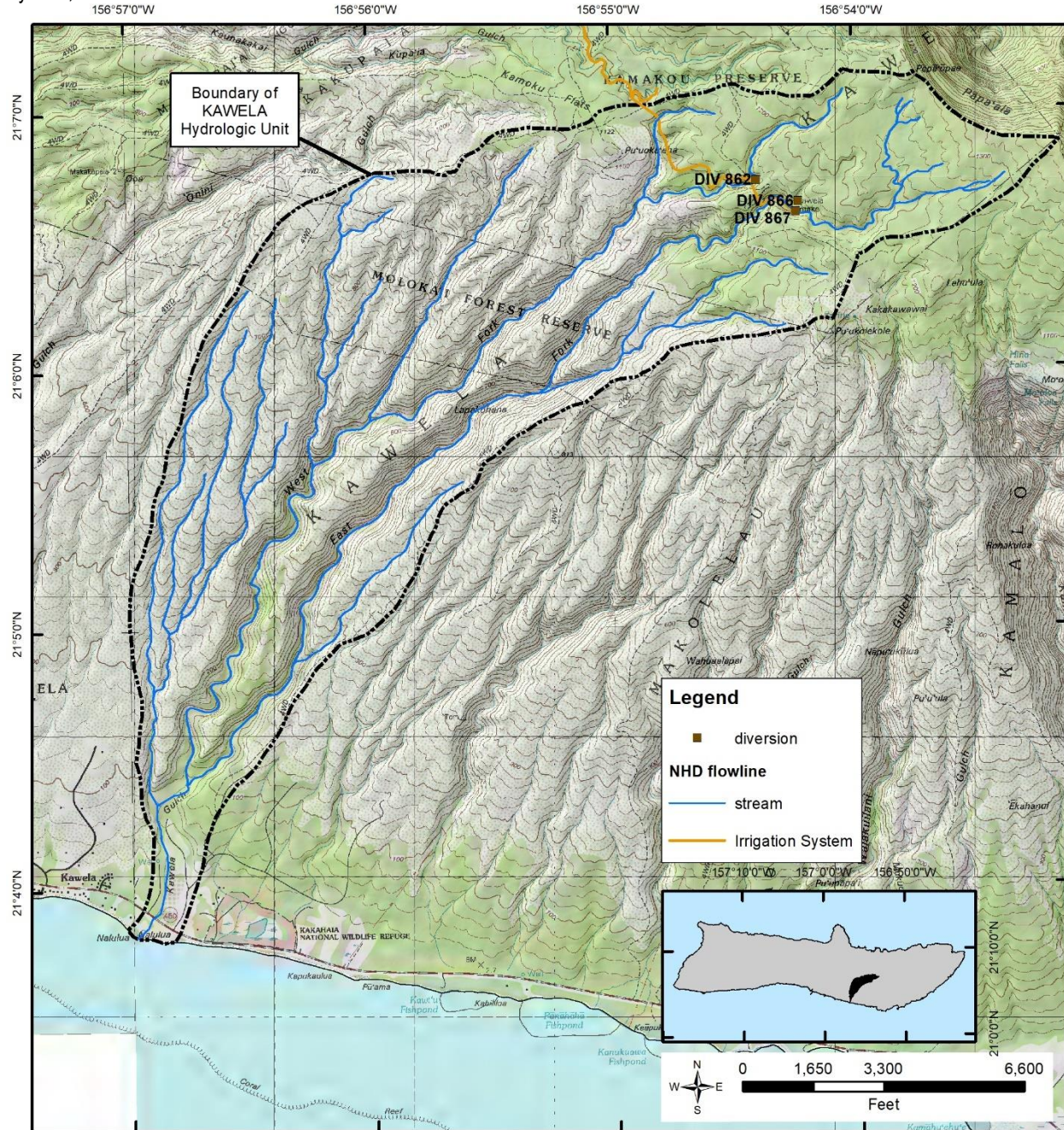


Figure 2. Registered diversions (ID) and ditches/pipelines identified in and nearby the Manawainui hydrologic unit as part of the Mountain Water System, Moloka'i.

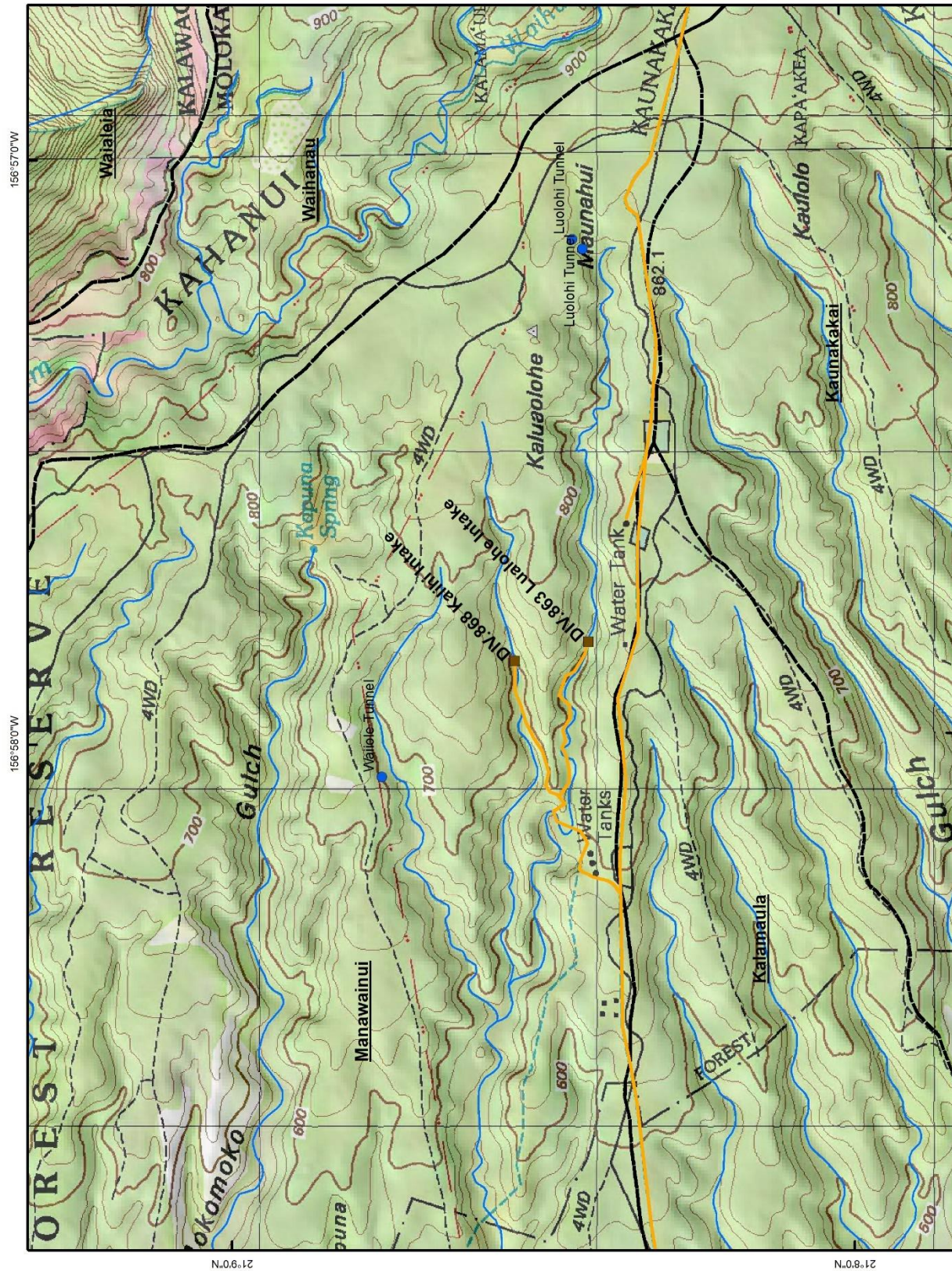
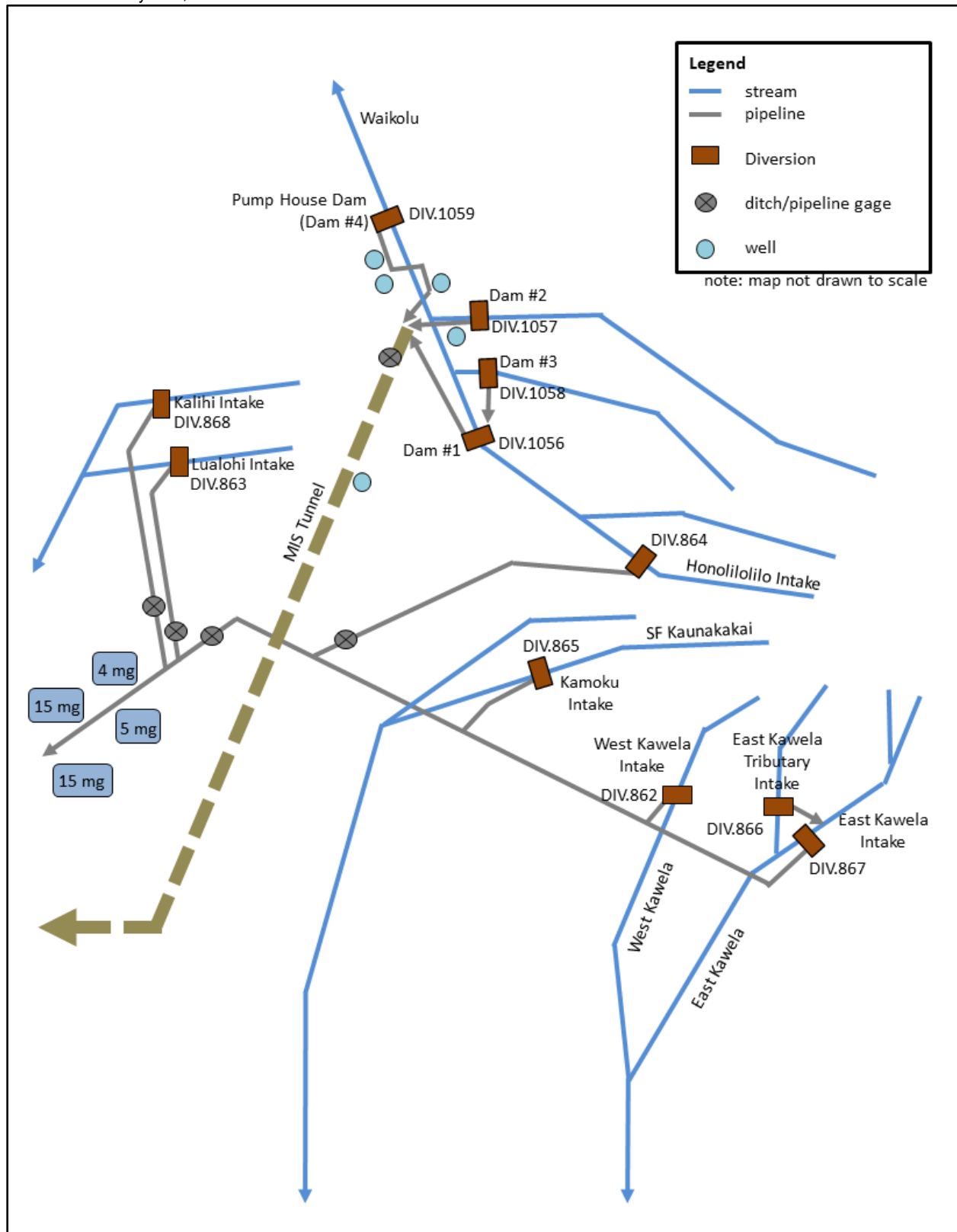


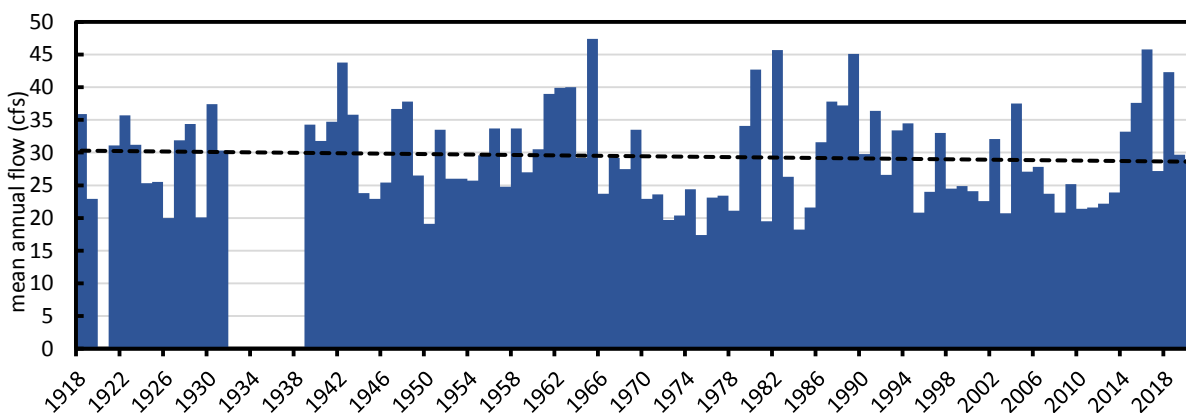
Figure 3. Schematic diagram of diversions (ID), wells, ditches and pipelines as part of the Molokai Irrigation System and the Mountain Water System, Moloka'i.



HYDROGEOLOGIC CONTEXT

Virtually all streamflow on Molokai originates in the East Molokai Mountains and flows north and east to the ocean. The major drainage basins are Waikolu, Pelekunu, Wailau, and Halawa valleys. These valleys are deeply incised, exposing high-elevation dike-confined groundwater storage that contributes to perennial flow to the ocean. Rainfall events contribute to the saturation of high elevation swamp environments and runoff results in flashy hydrographs. Streams in the southern and western sides of East Molokai Volcano flow perennially in the higher elevations, as high-level perched discharge, but surface water is lost to groundwater seepage into the more permeable basalts in the lower stream channel and only during peak flow events do these streams currently reach the ocean. The longest record of continuous streamflow on the island occurs at USGS station 16400000 on Halawa Stream (Figure 4). In the Kawela hydrologic unit, there are two main tributaries: the East Fork and West Fork. The USGS has maintained a station (16415000) above the EF Kawela intake (Diversion 867) since November 2018. Figure 5 provides an example water year (2021) of mean daily flow in East Fork Kawela Stream above diversion 867 and the daily flow diverted at the intake.

Figure 4. Mean annual flow (million gallons per day, mgd) at USGS station 16400000 on Halawa Stream, Molokai. Line represents linear regression trend over the period of record. (Source: USGS, 2020)



Using hydrological modeling techniques with rainfall, basin area, continuous streamflow monitoring, and partial-record gaging stations, low-flow duration streamflow metrics were developed for the catchments that contribute to stream diversions without field data (Table 5). Modeled results predicted low-flow duration estimates with a high degree of accuracy based on the Nash-Sutcliffe Efficiency Index (NSE) and coefficient of determination (R^2): Q_{50} NSE = 0.975, $R^2 = 0.994$; Q_{70} NSE = 0.996, $R^2 = 0.996$; Q_{90} NSE = 0.997, $R^2 = 0.997$; Q_{95} NSE = 0.941, $R^2 = 0.998$. However, extreme low-flow conditions are affected by small differences in topography, rainfall, vegetation, and geology that are not captured in the model and may affect surface flow on any given day. There are two development tunnels (tunnel 9 and tunnel 10) located in Lualohe Gulch at 2,780 ft and 2,800 ft a.s.l., respectively, discharging 30,000 gpd and

300 gpd, respectively⁵. These tunnels were dug into ash beds in the upper member of the East Molokai volcanic series. These tunnels increase the flow above that estimated based on modeling as none of the other streams monitored have development tunnels. Estimated flow in Lualohe has been updated to reflect this.

On January 22, 2022, Commission staff measured a flow of approximately 0.008 cfs (0.005 mgd) on East Kawela Tributary and 0.0209 cfs (0.014 mgd) on LB SF Kaunakakai at the Kamoku intake when East Kawela Stream was flowing at approximately Q₉₀ (0.138 cfs, 0.095 mgd), reinforcing the model results.

On February 27, 2022, Commission staff measured a flow of 0.038 cfs (0.0245 mgd) at Lualohe Stream and 0.0075 cfs (0.0048 mgd) on LB SF Kaunakakai at the Kamoku intake when East Kawela Stream was flowing at approximately Q₉₅ (0.1055 cfs, 0.068 mgd), further supporting the model results.

Table 5. Estimated natural median (Q₅₀) and low-flow (Q₇₀ to Q₉₀) values available at each registered diversion for the Mountain Water System. [cfs = cubic feet per second; (mgd = million gallons per day)]

Stream	estimation method	Q ₅₀	Q ₇₀	Q ₉₀	Q ₉₅
East Kawela	Continuous	0.52 (0.34)	0.26 (0.17)	0.13 (0.08)	0.10 (0.06)
East Kawela Tributary	Model	0.015 (0.01)	0.004 (0.0025)	0.0012 (0.0008)	0.0010 (0.0006)
West Kawela	Partial-Record	0.045 (0.029)	0.016 (0.010)	0.0054 (0.004)	0.004 (0.002)
Kamoku	Partial-Record	0.051 (0.033)	0.017 (0.011)	0.006 (0.004)	0.004 (0.002)
Hanalilolilo	Model	0.274 (0.177)	0.109 (0.070)	0.053 (0.034)	0.027 (0.017)
Ranch line	total	0.959 (0.620)	0.438 (0.283)	0.209 (0.135)	0.101 (0.065)
Kalihi	Model	0.0088 (0.0057)	0.0021 (0.0014)	0.0006 (0.0004)	0.0005 (0.0003)
Lualohe	Model*	0.116 (0.075)	0.061 (0.039)	0.042 (0.027)	0.037 (0.024)
Dole line	total	0.044 (0.081)	0.068 (0.044)	0.041 (0.0274)	0.038 (0.0243)

*plus the addition of water from two development tunnels

Groundwater-Surface Water Interactions in Kawela

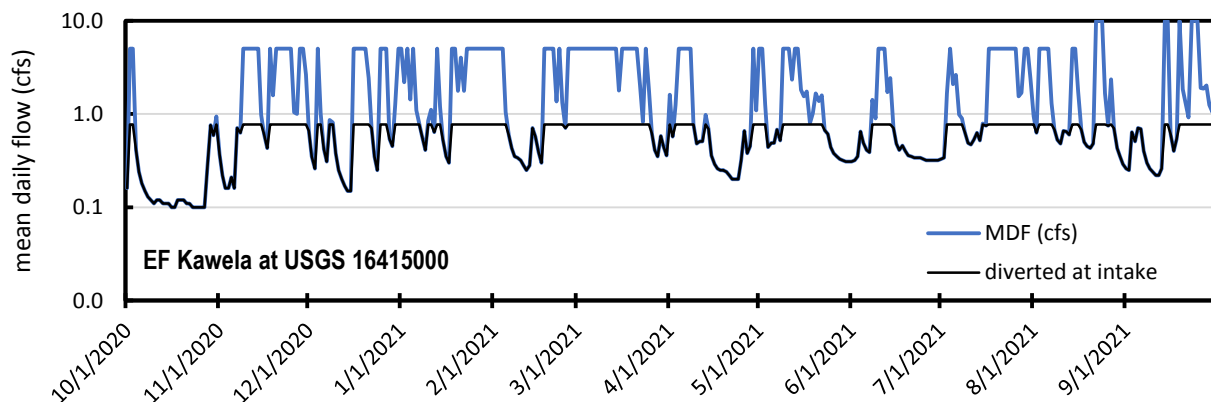
Saturated high-elevation wetland soils support perennial flow in the uppermost reaches of Kawela, Kaunakakai, and Manawainui streams (Figure 6). Kawela stream gains flow as the gulch incises thin ash layers of the upper member of the East Molokai Volcanic Series that support perched water. In the transition to the lower member series at about 1500 ft in elevation, streamflow begins to lose surface flow to groundwater recharge of the basal aquifer. During baseflow conditions, 100% of the surface flow is recharging the basal lens. The basal aquifer historically supported coastal springs, wetlands, and nearshore ecosystems through submarine groundwater discharge, although surface and groundwater withdrawals and landcover change have negatively affect the natural discharge. Current estimated groundwater discharge to nearshore environments and important subsistence gathering and fishing sites are identified in

⁵ Stearns, H.T., MacDonald, G.A. 1947. Geology and Ground-water Resources of the Island of Molokai. Hawaii Division of Hydrography Bulletin 11. p. 73.

Figure 11. Archaeological evidence suggests the stream regularly flowed ma uka to ma kai prior to the Great Māhele.

To better characterize the availability of groundwater for the Kawela Plantation Estates development, the time domain electromagnetic (TDEM) surface geophysical technique was used to map the fresh/saline groundwater interface in 1995⁶ and 2006⁷. In summary, soundings were made along two survey lines which extended from an elevation of approximately 1,300 elevation to 2,700 ft elevation approximately parallel to Kawela Gulch on either side as well as a perpendicular line at approximately 525 ft elevation. Below approximately 2,100 ft the fresh/saline water interface was mapped in both lines. In the line west of Kawela Gulch, a significant thickening of the basal groundwater lens occurred between elevations of 1,470 ft and 2,100 ft. indicating a change in horizontal hydrologic permeability likely as a result of lateral permeability changes caused by vertical dikes. This also coincides with the approximate transition from the upper to lower member of the East Molokai Volcanics. Above approximately 2,100 ft, TDEM did not map the saline/fresh groundwater interface. Based on this, the fresh/saline interface is likely below 750 ft below sea level. Although it is probable that volcanic dike damming structures occur either at the higher elevation soundings or immediately down slope from them, it is unknown if high level groundwater is present at these upper elevation sites. In the line perpendicular to the gulch, the area with the thickest basal lens was approximately 1,000 ft east of the East Kawela Gulch and is likely gaining the most influx of groundwater recharge from the Kawela streams.

Figure 5. Mean daily flow (MDF) in cubic feet per second (cfs) in East Kawela Stream at USGS 16415000 and diverted by the intake on the East Fork Kawela Stream at 3,650 ft for water year (WY) 2021.



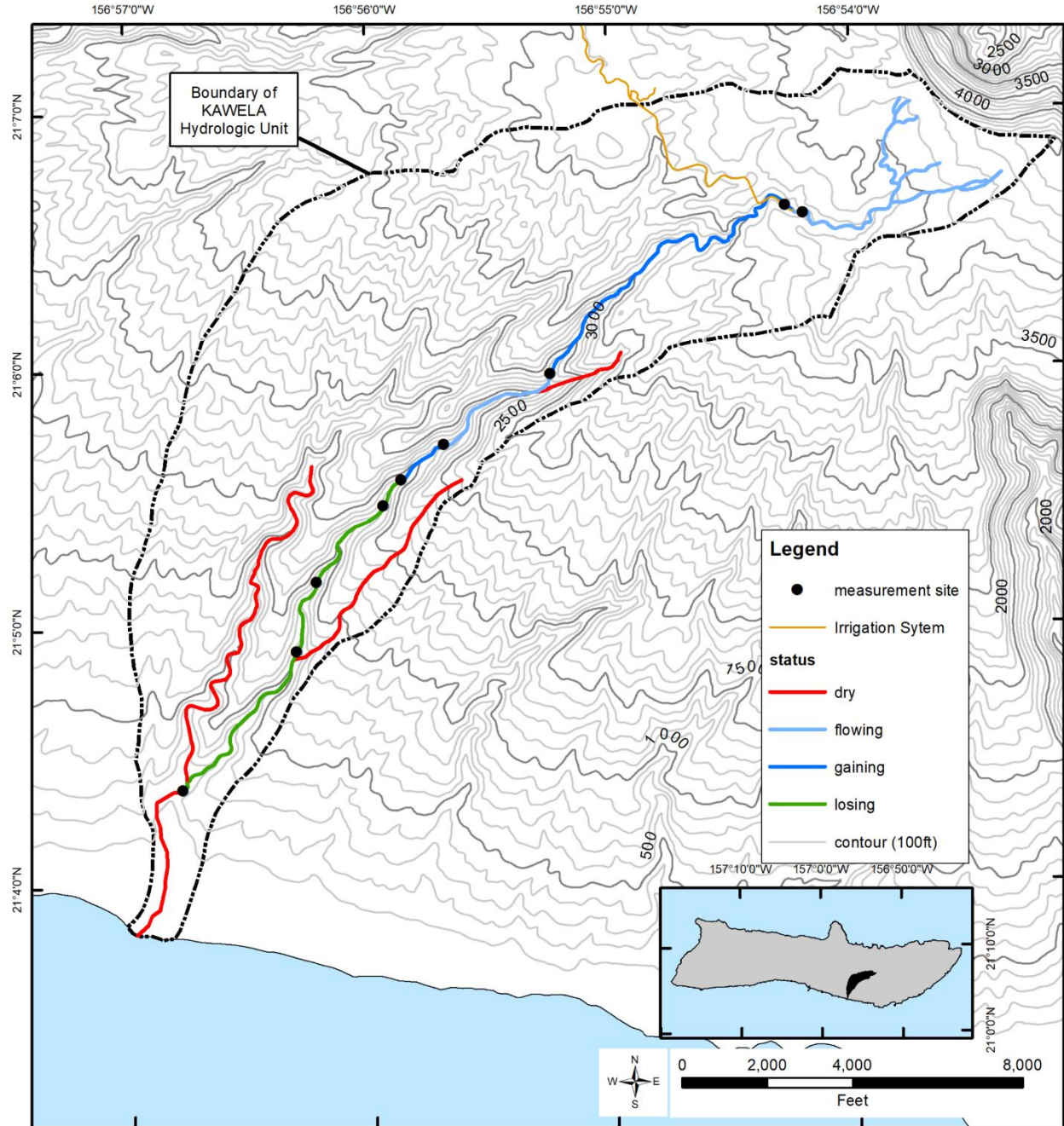
Long-term trends in rainfall and streamflow

The climate has profound influences on the hydrologic cycle and in the Hawaiian Islands, shifting climate patterns have resulted in an overall decline in rainfall and streamflow. Rainfall trends are driven by large-scale oceanic and atmospheric global circulation patterns including large-scale modes of natural variability such as the El Nino Southern Oscillation and the Pacific

⁶ Tom Nance. 1995. Final Report: Geophysical Survey Performed on the Island of Molokai, State of Hawaii. Blackhawk Geosciences, Golden, Colorado. Project Number 9131.

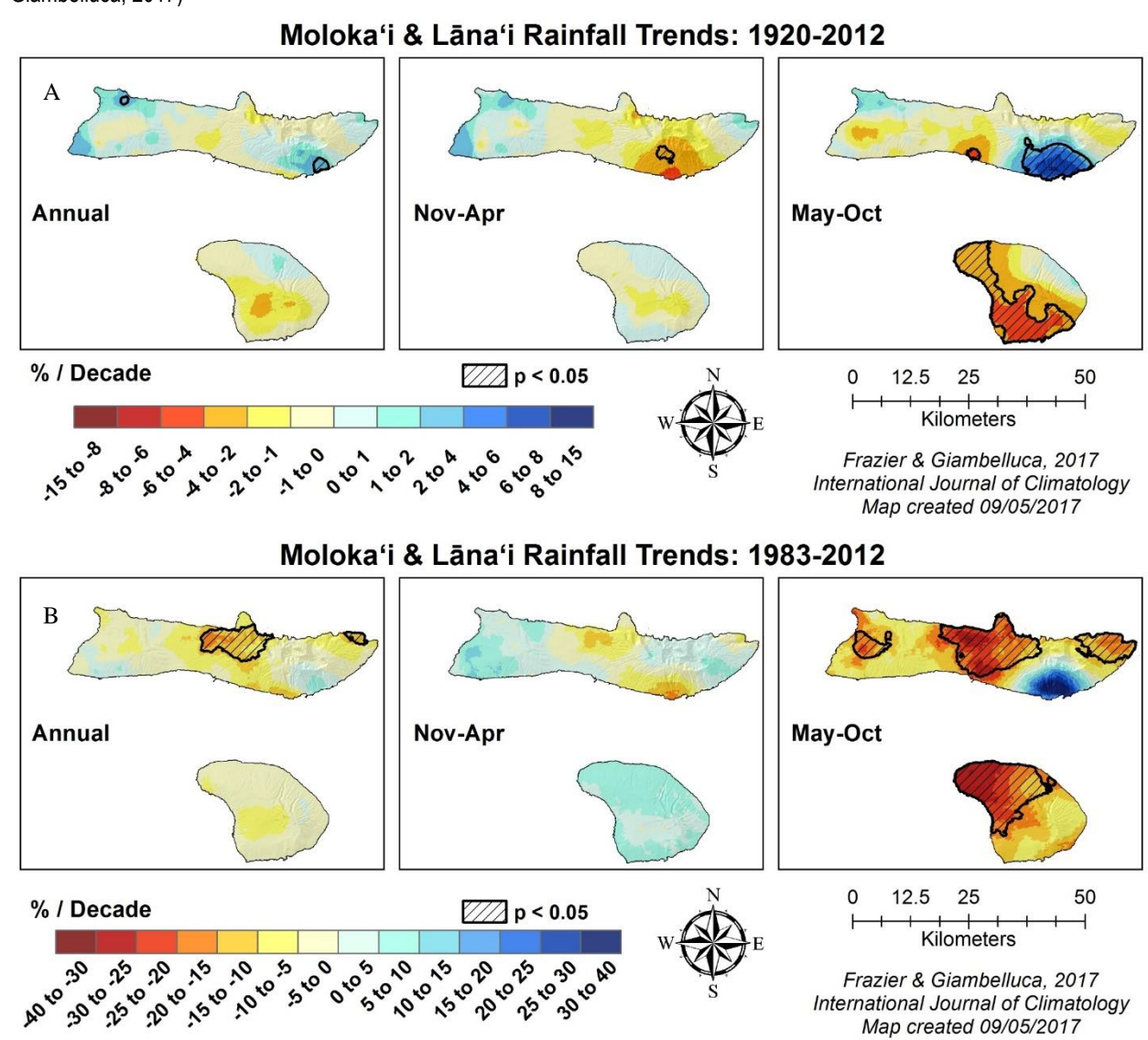
⁷ Tom Nance. 2006. Time domain electromagnetic surveys for assisting in determining the groundwater resources on Kawela Plantation Property, Island of Molokai. Blackhawk Geosciences, Golden, Colorado. Project Number 5017.

Figure 6. Streamflow gains and losses measured by USGS during seepage runs in 2010 that span multiple dates for different reaches.



Decadal Oscillation, as well as more localized temperature, moisture, and wind patterns (Frazier and Giambelluca, 2017; Frazier et al, 2018). Long-term trends in surface water on Molokai are difficult to assess as few monitoring stations have continuous records for sufficient length of time. Using monthly rainfall maps, Frazier and Giambelluca (2017) identified regions that have experienced significant ($p < 0.05$) long-term decline in annual, dry season, and wet season rainfall for differing periods of record. On Molokaʻi, some areas have experienced a significant decline in annual and seasonal rainfall in the 1920 to 2012 period, and for large parts of the island from 1983 to 2012 (Figure 7). Since 1983, Hoʻolehua region has experienced a significant ($p < 0.05$) decline in annual (5 to 20% per decade) and dry season (20 to 40% per decade) rainfall. Similarly, west Molokaʻi has experienced a 5 to 10% per decade decline in dry season rainfall.

Figure 7. Annual, wet season (Nov-Apr) and dry season (May-Oct) rainfall trends for the 1920-2012 (A) and 1983-2012 (B) periods, Molokai and Lanai. Hashed line areas represent significant trend over the period. (with permission from Frazier and Giambelluca, 2017)



SPECIFIC INSTREAM USE CONSIDERATIONS

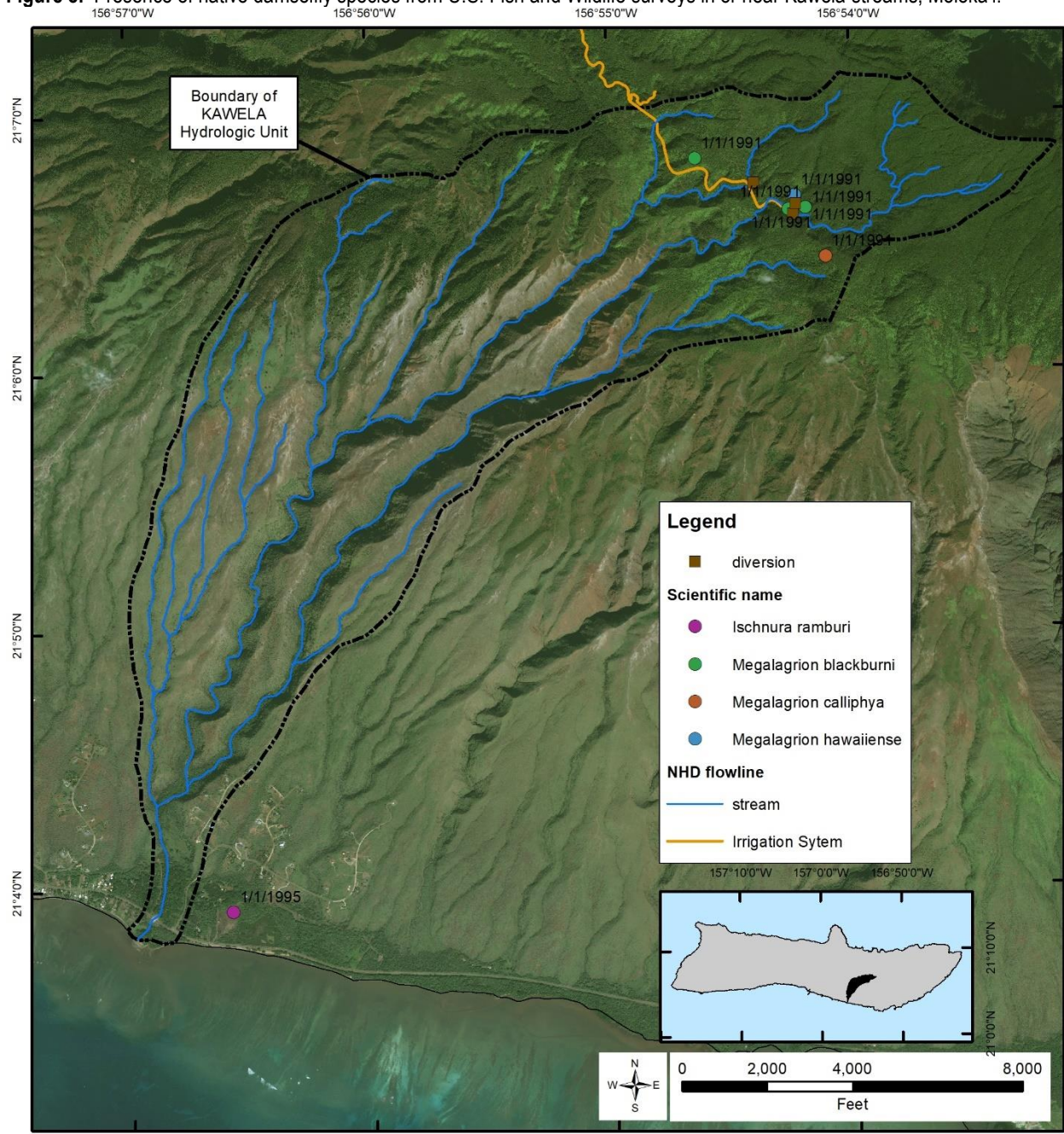
The maintenance of instream flows is important for the protection of traditional and customary Hawaiian practices as they relate to the maintenance of stream (e.g., hīhiwai, ‘ōpae, ‘o‘opu) and riparian (vegetation) resources for gathering for consumption and medicinal uses, recreation within streams, and the cultivation of kalo or other traditional crops. The traditional Hawaiian ahupua‘a has ma uka to ma kai flow sufficient to sustain the environment and community. Many religious and cultural practices utilize riparian vegetation that benefits from continual flow. Table 1 provides a summary of resources and traditional and customary practices associated with these streams. Further the gathering of culturally important nearshore species benefits from freshwater spring flow that is negatively affected by stream and groundwater withdrawals. Table 6 provides a summary of the Hawaiian Stream Assessment results for the Kawela watershed.

Surface flow in Kawela improves groundwater recharge of the lower member of East Molokai Volcanics, which benefits the maintenance of stream and nearshore habitat, including spring flow to fish ponds. Restoration of downstream flow will also increase the frequency of ma uka to ma kai flow, maintaining greater connectivity among stream reaches that support native amphidromous species, improve recreational value, and aesthetic value. The Kawela hydrologic unit supports a diversity of amphidromous species as detailed in the Division of Aquatic Resources (DAR) Watershed Atlas Report attached to the IFSAR. Surface flow in these streams supports a high density of threatened and endangered riparian plants as well as five damselfly species, some of which are threatened or endangered: *Megalagrion pacificum*, *Megalagrion hawaiiense*, *Megalagrion xanthomelas*, *Megalagrion blackburni* and *Megalagrion calliphya*, as identified in Figure 8.

Table 6. Hawaii Stream Assessment results for the Kawela, streams, Molokaʻi.

Biological Resources	Rank	Riparian Resources	Rank
Final Rank	Limited (2 of 4)	Final Rank	Substantial (3 of 4)
Alamoo	present	Detrimental species	mangrove, pigs, deer, goats
Nakea	present	% native forest	--
nopili	--	Presence of recovery habitat	--
Hihiwai	--	# T&E birds	--
# NG2	--	# of rare plants	--
		Wetlands	--
Cultural Resources	Rank	Recreational Resources	Rank
Final Rank	Outstanding (4 of 4)	Final Rank	Outstanding (4 of 4)
taro cultivation	no	Opportunities	Camping, hiking, fishing, swimming, hunting, scenic views
# archaeological sites	15	Regional rank	1
density	High		
valley significance	Pre-contact, excellent examples, important information, culturally noteworthy		

Figure 8. Presence of native damselfly species from U.S. Fish and Wildlife surveys in or near Kawela streams, Moloka'i.



NON-INSTREAM USE CONSIDERATIONS

The presence of the mountain water system (MWS) adds considerable complexity to the Commission's role in weighing instream and noninstream uses. This is largely due to the transfer of water from one hydrologic unit to another, but also the importance of the system to both agriculture and industrial water supply in Ho'olehua and west Molokai and in the

consideration of economic impacts. It is also important to consider the consequences of system operation relative to public trust uses of water. Further, the potable and non-potable systems that now fall under Molokai Property's usage were historically interconnected and included connectivity to the Molokai Irrigation System (MIS). A new pipeline from Well 17 to west Molokai (connecting to Mauna Loa and Kaluakoʻi) has eliminated the need to use the MIS. The Dole Line was also connected to the MIS, however this connection has since been severed.

Mountain Water System

In total, the MWS consists of seven separate intakes, a number of large and small reservoirs, booster pump stations, transmission pipelines, and tanks. The system primarily captures surface water from Kawela and Waikolu watersheds, with smaller diversions from Kaunakakai and Manawainui watersheds. The total non-potable reservoir capacity is 49,450,000 gallons, split between the 5,000,000 and 4,000,000 gallon reservoirs at the top of the system, the two newly built and lined 15,000,000 gallon reservoirs immediately below these reservoirs, and three reservoirs in west Molokai: the 7,000,000 gallon Puunana Reservoir, the 250,000 gallon Puunana Agricultural tank, and the 3,200,000 gallon Mauna Loa Reservoir. In 2004, Molokai Ranch estimated is December daily mean usage of non-potable water as 70,000 gpd. All current metered non-potable water uses as provided by Molokai Properties are identified in Table 8. Some non-potable needs in Kaluakoi are currently met with potable water from Well 17 due to the lack of parallel infrastructure to supply non-potable water. From 2016 to 2020, the mean daily usage of non-potable water (excluding Kualapuʻu Ranch) was 41,790 gpd. During the last few months of 2020, Kualapuʻu Ranch started receiving approximately 20,000 gpd for a new hemp farm, bringing the mean daily usage up to approximately 62,000 gpd. However, as of February 2022, Kualapuʻu Ranch has discontinued its hemp production.

Monitoring of diverted flow

The East Kawela tributary intake (Diversion 866) and transmission pipeline has not been operational since at least 2005. West Kawela Intake (Diversion 862), Kamoku Intake (Diversion 865), Kalihi Intake (Diversion 868), and Lualohe Intake (Diversion 863) have also not been in use since 2005.

Monitoring flow data provided by Molokai Ranch and Molokai Properties for individual intakes is only available for the Kalihi (Diversion 868) and Lualohe (Diversion 863) intakes and the Hanalilolilo intake (Diversion 864). The flow from East Kawela (Diversion 867) intake is monitored after the contribution from Hanalilolilo, which allows for estimates of the East Kawela flow after removing the Hanalilolilo flow. While available data are limited in duration, the diverted flow for varying periods of time is provided in (Table 3). Mean daily flow values are available from 11/7/2018 to 9/30/2021 at USGS 16415000 on East Fork Kawela Stream. Based on this stream flow record and intake capacity, the mean amount diverted from East Kawela Stream for this period was 0.36 cfs (0.23 mgd). There were 58% of days that had zero flow remaining immediately below the East Kawela diversion. The minimum mean daily flow recorded at USGS 16415000 was 0.06 cfs (0.04 mgd).

Water Lost Due to Evaporation From Reservoir Surfaces

The active reservoirs associated with the MWS are lined, but substantial evaporative loss is occurring due to the exposure to solar radiation and high winds. Table 7 identifies the individual

characteristics of each MWS reservoir and the total annual water lost when the reservoirs are at full capacity. Because surface area diminishes as capacity decreases due to the angle of the reservoir sides, the total annual water lost may be slightly less.

Table 7. Characteristics of active reservoirs associated with the Mountain Water System. [note: Maunaloa Reservoir is covered and part of the potable water system]

Reservoir	Elevation (ft)	Area at full capacity (acres)	Actual Annual evaporation (in)	Annual Water Lost (mg)	Mean Daily Water Lost (gpd)
Kawela	2710	1.595	36.81	1.594	4368
Dole	2640	0.684	37.47	0.696	1908
Mountain Reservoir 1	1940	2.700	43.49	3.189	8737
Mountain Reservoir 2	1900	2.626	44.77	3.192	8745
Puunana	1305	1.836	23.80	1.187	3251
Maunaloa	1200	0.692	n/a	0	0
Livestock Reservoirs	900	3.922	21.48	2.288	6268
total					33,277

Other Water Systems Owned by Molokai Properties

Molokai Properties owns Well 17 (Well No. 4-0901-001) which supplies potable water to some customers in the Kualapuʻu, Kalae, Manawainui Industrial Park, Maunaloa town, and Kaluakoʻi development. The estimated current and planned potable water needs supplied by Well 17 as provided by Molokai Properties are listed in Table 8. While the Kaluakoʻi development has not grown as originally planned and the original hotel and golf course have closed down, there are long-term plans to rebuild the resort and additional home sites are already zoned.

ISSUES/ANALYSIS

The next step to developing an interim IFS is to balance often-competing instream and noninstream uses of water, which may include public trust uses, against the amount of water available to accommodate the needs of these uses. Again, the quantity and quality of information varies from stream to stream. This step is further complicated by the tremendous variability of instream and non-instream uses across and within surface water hydrologic units. For example, one stream may support extensive *kalo* cultivation while another may primarily support domestic uses. The potential of the stream and hydrologic unit to support additional water use in the future has also been considered. The four public trust uses of water include: (1) Water in its natural state; (2) Water used for traditional and customary practices; (3) Water for domestic uses; and (4) Water reserved and used by the Department of Hawaiian Home Lands. The process is to be based upon best available information when balancing the present or potential, instream and non-instream uses.

In developing the interim IFS recommendations, staff has attempted to remain consistent in balancing all of the instream and noninstream uses of each stream based upon the best available information presented in the IFSAR, along with the oral and written comments received through the public review process. This process is challenging due to the unique nature of each stream, the various instream and noninstream uses of water, and the logistical challenges of instituting an

interim IFS. Whether attempting to compare stream characteristics across multiple hydrologic units or within one unit, no single principal or equation determines the rate of flow restoration. However, the principals established by the State Constitution, the Hawai'i State Water Code (HRS 174C), administrative rules, and case law interpreting all of the above, are applied appropriately. Further, while water in its natural state is a public trust use, so is water needed to meet the needs of DHHL and domestic needs of the general public.

The analysis of waste must take into consideration the suitability of a particular water use, the reasonable water needs of that use, the efficiency of the system to meet that use, and the consequences of that use on public trust uses of water.

The Interim IFS and Diversion Abandonment

In order to promote the recognized public trust purposes of water, including the protection of the recognized instream values as specified in the Code, a continual flow of water must be established past each diversion. In streams with baseflow maintained by substantial groundwater discharge (i.e., EB NF Wailua River at USGS 16068000), median baseflow is equivalent to a flow between the Q_{70} and Q_{80} of total flow⁸. By contrast, in streams that originate from perched water draining high-elevation bog environments (i.e., Waialae Stream at USGS 16019000), median baseflow is equivalent to a flow between Q_{80} and Q_{90} of total flow⁹. The perennial streams diverted by the MWS fall under the latter, being supported by small, perched water bodies and seepage flowing from the swamp. For these reasons, establishing an interim IFS at Q_{80} maintains 100% of the baseflow in the stream. Particular streams diverted by the MWS (e.g., East Kawela tributary, West Kawela, and SF Kuhuaawi at Kalihi intake) have such small low-flows (<0.001 mgd) that an interim IFS that protects instream uses will render the intake unusable except at high flows. Therefore, abandonment is recommended. The unusually large capacity of the non-potable reservoirs provides hundreds of days of backup storage that can be utilized if an interim IFS limits the availability of flow during dry periods.

By establishing an interim IFS at the Q_{80} flow, 20% of the time zero water will be available for non-instream usage. In order to maintain the 75,000 gpd of current demand (i.e., 42,000 gpd of use + 33,000 gpd of evaporative loss) as well as the demand of potential public trust uses (i.e., domestic and DHHL), a volume of water greater than this demand must be diverted during higher flow periods to support storage for use during low-flow periods.

End Uses of Molokai Properties Water Systems

Molokai Properties has three subsidiary utilities: Waiola O Molokai (WOM), Molokai Public Utilities, Inc (MPU), and Mosco, Inc. Mosco is the wastewater utility, while WOM and MPU are water delivery utilities. The WOM utility operates a potable water system that services the Kalae, Kualapu'u, Ho'olehua, Manawainui, Mauna Loa, and Kaluako'i areas, now solely delivering water from Well 17. MPU has provided water service in the Kaluako'i area in west Moloka'i since 1981. When Molokai Properties ceased operations of its hotel and resort facilities in 2007, it could no longer afford to manage both utilities at a loss and tried to sell

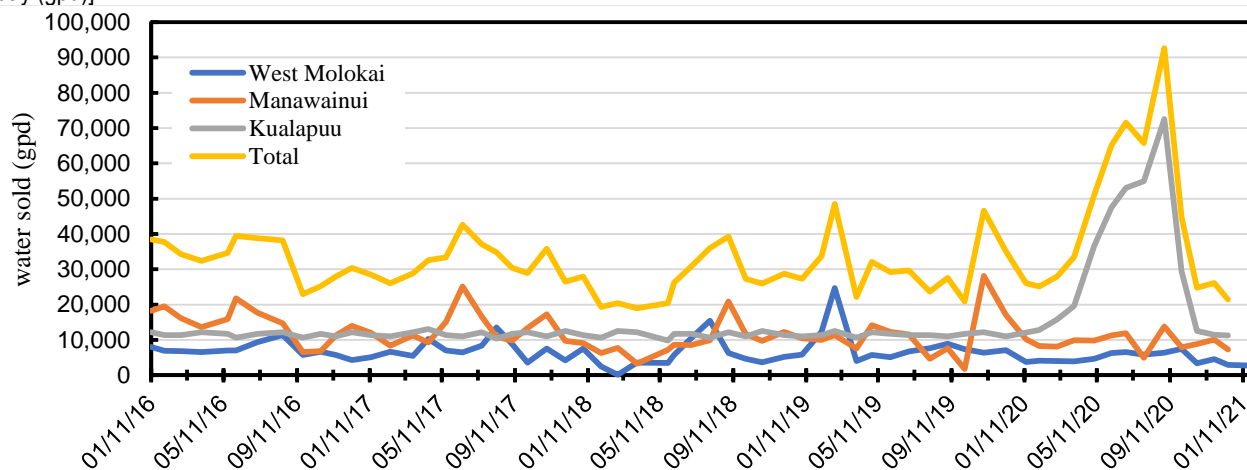
⁸ Cheng, C.L. 2020. Low-flow characteristics of streams from Wailua to Hanapepe, Kaua'i, Hawai'i. U.S. Geological Survey Scientific Investigations Report 2020-5128. 57 p.

⁹ Cheng, C.L. 2020. Low-flow characteristics of streams from Wailua to Hanapepe, Kaua'i, Hawai'i. U.S. Geological Survey Scientific Investigations Report 2020-5128. 57 p.

them. The PUC intervened and allowed a temporary rate increase until the utilities could apply for a permanent rate increase. Two reasons why these water utilities are so expensive to run is that: 1) the sources are very far from many of the end uses, necessitating the repair and maintenance of many tens of miles of pipelines, some of which are very old; and 2) both systems require the use of costly booster pumps to distribute water to their end uses. For the year 2010, WOM had 4,580 service connections and billed 50,000,000 gallons, resulting in an average usage of 10,900 gallons per connection. Once the Mauna Loa Lodge and Kaluakoʻi resorts were closed, the costs to treat water at Puunana declined precipitously (e.g., it was as high as \$140,860 in 2004). Once the potable pipeline connecting Well 17 to Mauna Loa was completed, there was no need to operate the Puunana WTF and non-potable water is being piped directly to Mauna Loa.

Water from the non-potable mountain water system is delivered to various customers in three distinct areas by Molokai Properties: West Molokai, Manawainui Industrial Area, and Kualapuʻu. The variability in water delivery is depicted in Figure 9. The West Molokai customers also includes the livestock water demands of Molokai Properties. The large increase in demand in 2020 is the result of deliveries to Kualapuʻu Ranch for a new hemp agricultural business referenced above, which has also ceased operations in February 2022.

Figure 9. Monthly non-potable water sold by system and in total from the mountain water system. [flow in average gallons per day (gpd)].



AVAILABILITY OF ALTERNATIVE SOURCES

In the State of Hawaiʻi Supreme Court Ruling¹⁰ on the contested case hearing on the water use permit application filed by Kukui (Molokai) (a water utility of Molokai Ranch and now Molokai Properties), the Supreme Court ruled that the Commission failed to consider the feasibility of alternative sources of water needed to balance the distribution of scarce public trust resources. While the Commission ordered Kukui (Molokai) to complete an analysis of the use of non-potable water to meet non-potable needs in the Kaluakoʻi Development in its final Decision & Order, such an analysis has not been submitted to the Commission. Commission staff considers

¹⁰ Supreme Court of the State of Hawaiʻi. No. 24856. Appeal from the Commission on Water Resource Management (Case No. CCH MO97-1). December 26, 2007.

surface water already transmitted to Mauna Loa town, which could then be delivered by gravity to the Kaluakoʻi Development, as a viable alternative to groundwater. The interrelationship between potable and non-potable water supplies, the various utilities, and their services areas for Molokai Properties is provided in Figure 10.

Molokaʻi is a water management area and groundwater withdrawals for Maui County, DHHL, and Molokai Properties all occur in the Kualapuʻu aquifer system within half a mile of each other. There is high potential of increased upconing among the wells such that saltwater intrusion will affect the viability of a water source. Further, reductions to submarine groundwater discharge may have negative consequences for coastal ecosystems (Figure 11). The Commission also seeks to use water for its most appropriate purpose; that is groundwater for human consumption and surface water for non-potable irrigation needs.

Groundwater Alternative: Well 17 Water Use Permit Application by Molokai Properties

In their latest water use permit application (WUPA) for Well 17 (Well No. 4-0901-001), Molokai Properties identified existing and planned potable water uses. While the application only specifies the water sourced from Well 17, there are non-potable water deliveries to these same uses within the various service areas. The total and per unit average daily need of existing and planned uses by service area for potable and non-potable water is identified in Table 8. Most of the existing metered uses are below Maui County water demand estimate standards with the exception of the Kaluakoʻi Resort Residences, which have an average of 1,288 gpd per unit. This use is described by Molokai Properties in their WUPA as both domestic consumption and irrigation of landscaping and agriculture in agriculturally zoned parcels. However, in 1968, the State Land Use Commission approved the rezoning of 3,305 acres of land in the Kaluakoʻi region from agriculture to urban for the first phase of the Kaluakoʻi Resort Development; and no parcels in the resort are zoned agriculture.

There are multiple locations where potable water is being used to meet non-potable needs: Kipu Golf Course Office Area landscaping (area unknown); Kaluakoʻi Hotel landscaping (18.12 acres); Kaluakoʻi Resort Condo landscaping (35.448 acres); Kaluakoʻi Resort Residences (using 2x the county residence rate). Further, there are some inconsistencies in water use reporting for the Manawainui Industrial Park, which was historically fed only by the mountain water system. The three current tenants in the Manawainui Industrial Park (Tri-L, Space Options, and Swenson Construction) now have metered usage of both potable and non-potable water. Tri-L is a concrete manufacturer whose 5-year average usage of 13,338 gpd is described as 30% office (4,001 gpd) and 70% from surface water (9,337 pgd) but their non-potable metered usage is 7,358 gpd. While the current total water use reflects the use with much of the existing Kaluakoʻi Resort closed, the estimated existing water demand in Table 8 reflects if the built resort infrastructure were restored as originally built and reopened. Overall, Molokai Properties estimated total existing potable water use is 447,878 gpd (0.448 mgd). However, the Kaluakoʻi Resort landscaping and Kaluakoʻi Hotel landscaping 90,518 gpd (0.0905 mgd) demand is currently met with potable water. With appropriate infrastructure, the residential landscaping and the currently closed Kaluakoʻi golf course water use could be met with non-potable water available from the Mauna Loa Reservoir or the reused water provided by the wastewater treatment facility, or a combination of both. Thus, the reasonable potable demand is only 357,360 gpd.

Recycled Water Alternative

When the Kaluakoʻi hotel was open, treated water from the Kaluakoʻi wastewater treatment facility (WWTF) was available to support some of the non-potable irrigation needs of Kaluakoʻi including the golf course and resort landscaping. The facility consists of two 50,000 gpd treatment units and a 60,000 gpd unit. The maximum mean daily flow capacity is 160,000 gpd. In 2000, the former resort owner Kukui (Molokai) Inc., was found in violation of federal sewage standards since 1989. In the 2004 PUC docket (03-0400) for the utility operator, the system consisted of 351 residential customers, 5 single-family customers in Molokai Fairways subdivision, 346 multi-family/hotel customers in 3 associations, and the Kaluakoʻi golf course and was operating at 25% capacity.

Figure 11. Baseline groundwater withdrawal rates from wells and fresh groundwater discharge along coastal regions of central Molokai. (Source: Oki et al., 2019).

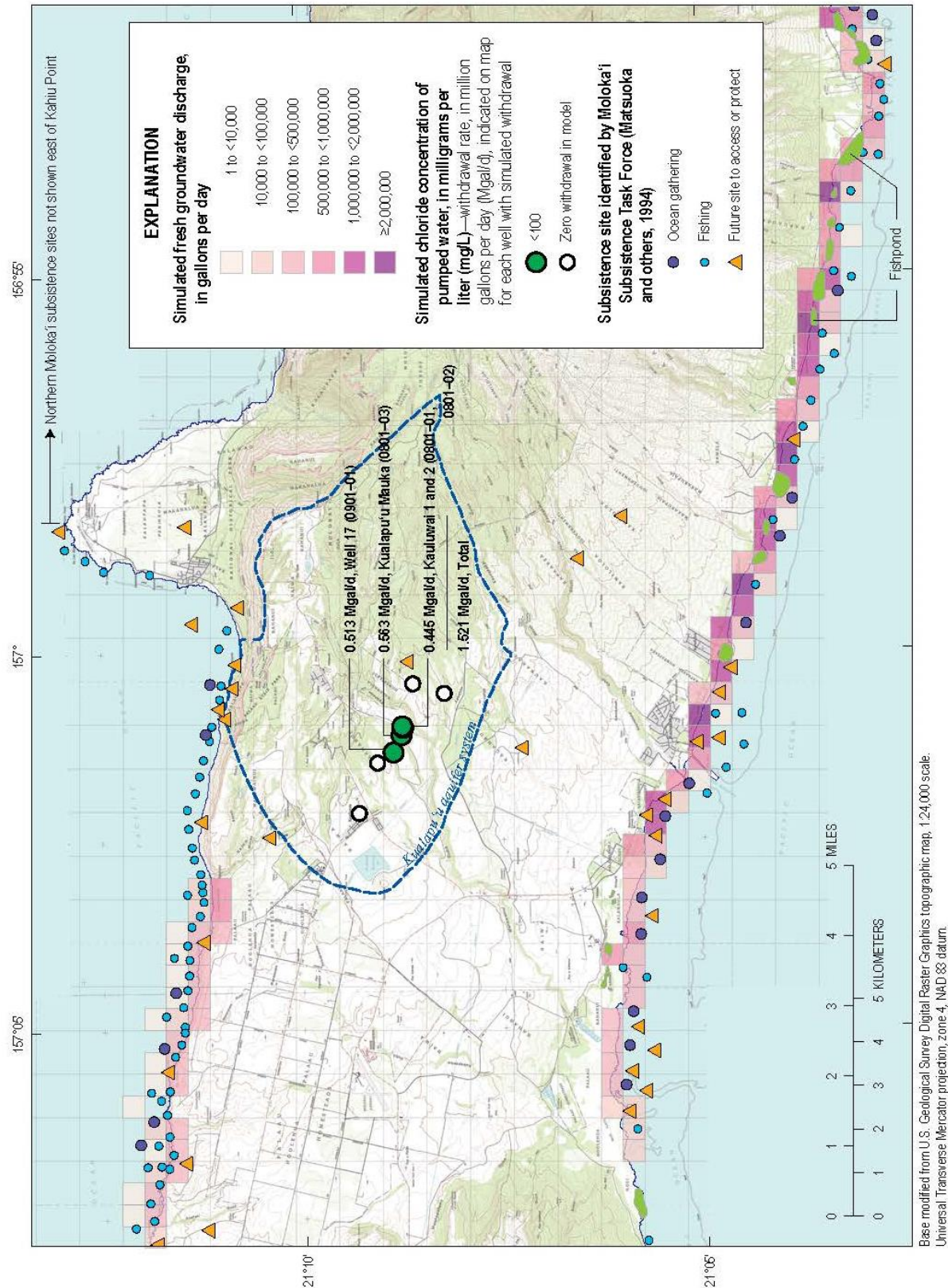


Table 8. Estimated existing and planned potable and non-potable water uses sourced from Well 17 (potable) and the Molokai Ranch mountain water system (non-potable) for Molokai Properties utilities. All values in gallons per day (gpd) [note: WOM = Waiola O Molokai; MPU = Molokai Public Utilities; ac = acres] *from County of Maui

Service Area (Utility)	Use	units		Water Use Rate ¹		Existing Total Water Use ¹		Planned Total Water Use	
		Existing	Planned	Potable	Non-Potable	Potable	Non-Potable	Potable	Non-Potable
Kala'e (WOM)									
	Kipu Residences	18	7	439		7,906		10,975	
	Kipu Golf Course Office Area	1	0	629		629		629	
Kualapu'u (WOM)									
	Residences	122	42	196		23,877		32,144	
	Reed House	1			6,069		6,069		6,069
	Shafer House	1			6,069		6,069		6,069
	County Park	1	0	1,047		1,047		2,332	
	Aka'ula School	1		236		236		529	
	Commercial businesses	5	1	1,010		5,052		6,060	
	Kualapuu Ranch ²						20,000		
Manawainui (WOM)									
	Manawainui Industrial Park	3	16	933		2,798	775	17,727	775
	Swenson (business)	1	0			480	768		768
	Space Options (business)	1	0			1,519	1,117		1,117
	Tri-L (concrete)	1	0			13,338	7,359		7,359
	The Gas Co.						3		3
	Maui Electric Co.						827		827
	Goodfellow Inc (office)						567		567
	Goodfellow Inc (crusher)						0		0
	Oliwai Pastures/Kamakana Farms ²						137		137
	Molokai Sea Farms ²						4,033		4,033
	County of Maui baseyard*					6,666	500	6,666	500
Maunaloa (WOM)									
	Molokai Ranch Livestock water						13,181		13,181
	Neighborhood Residences	143	323	251		37,192		81,073	
	Molokai Land Trust						122		122
	Sakugawa & Sons (livestock; ac)						185		185
	ARInc (lessee)						78		78
	Kaupoa Camp	80	0	112		8,950		8,950	
	Kolo Camp	20	0	38		761		761	
	Paniolo Camp	80	0	40		3,225		3,225	
	Lodge	22	0	359		7,903		7,903	
Kaluako'i (MPU)									
	Papohaku Beach Park	1	0	12,176		12,176		12,176	
	Papohaku Beach Access	5	1	377		1,883		2,262	
	Kaluakoi Resort Condos	124	350	350 ⁴		43,400		122,500	
	Kaluakoi Resort Landscaping (ac)	35.448	0		1,753		62,140 ³		62,140
	Kaluakoi Hotel units	148	0	350 ⁴		51,800		51,800	
	Kaluakoi Hotel Landscaping (ac)	15.12	18.12		1,877		28,378 ³		34,012
	Kaluakoi GC Facilities	5	0	600 ⁴		3,000		3,000	
	Kaluakoi Resort Residences	106	325	1,228		130,188		399,100	
	Kaluakoi Condos	0	284	350 ⁴		0	0	113,750	
	Kaluakoi Hotel & Apartments	0	481	350 ⁴		0	0	168,350	
	total					454,544	61,790	1,051,912	137,942

¹based on 5-year average monthly meter readings for potable (2013-2017) or non-potable (2016-2021); ²2020 data only

³currently being met with potable water from Well 17; included in existing potable water use total.

⁴county standard used

OTHER PUBLIC TRUST USES OF WATER

Maui County Municipal System

Maui Department of Water Supply (DWS) currently operates a municipal water system, including domestic users, that relies upon groundwater from one well in the Kualapu'u aquifer system and one in the Kawela aquifer system. In 1966, the county once operated a surface water system that supplied potable water all the way to the Kaunakakai region via a gravity-fed pipeline¹¹. This source was dependent on surface runoff captured at Maka'e'e Dam, located at the 2,365 feet elevation above Kalae in the Mokomoko Gulch below Kapuna Spring. Approximately 55,000 gpd was supplied by this system while the remainder of water demand was met via the Maui-type well (now called Kawela Shaft) constructed by the American Sugar Company in 1920.

Hawaiian Home Lands

A component in the assessment of water use includes an analysis of the water needs of the Department of Hawaiian Home Lands (DHHL) parcels within or near the surface water hydrologic unit. The mission of DHHL is to effectively manage the Hawaiian Home Lands trust and to develop and deliver land to native Hawaiians¹². In June 2005, DHHL published the Molokai Island Plan update, which serves to examine infrastructure needs, provide development cost estimates, and identify priority areas for homestead development. Of the more than 31,000 acres of DHHL land on the island of Molokai, there are none in the Kawela hydrologic unit. Most of DHHL's land holdings are in the central plateau region of Ho'olehua, some of which is serviced by the Molokai Irrigation System (Figure 12). Other nearby tracts include the Kalama'ula, Kapa'akea tracts along the southern coast. There was once a non-potable DHHL water system which diverted water from Waihanau Stream to Kalae and Kualapu'u as recently as 1982, although that system is not currently being used. Water was diverted from the Waihanau Stream at 2,264 feet in elevation through 2,800 feet of tunnel to an intake structure in Kahapa'akai Gulch. From there, it was delivered through an 8-inch and 6-inch pipeline to one 2-million gallon steel tank and two 80,000-gallon redwood storage tanks at Kauluwai then via two 6-inch lines to two 3.5-million gallon concrete reservoirs in Ho'olehua for homesteads. In 1966, the DHHL groundwater source (USGS Well 16) was used only as a supplemental source since energy costs to pump the well were great. The system averaged 285,000 gpd with 65,000 gpd for Kalaniana'ole colony on the southern coastal area and 220,000 gpd used in the Ho'olehua area, not including water delivered by the MIS¹³. Historically, DHHL also operated a stream diversion in Kamiloloa Gulch on the SF Kaunakakai Stream.

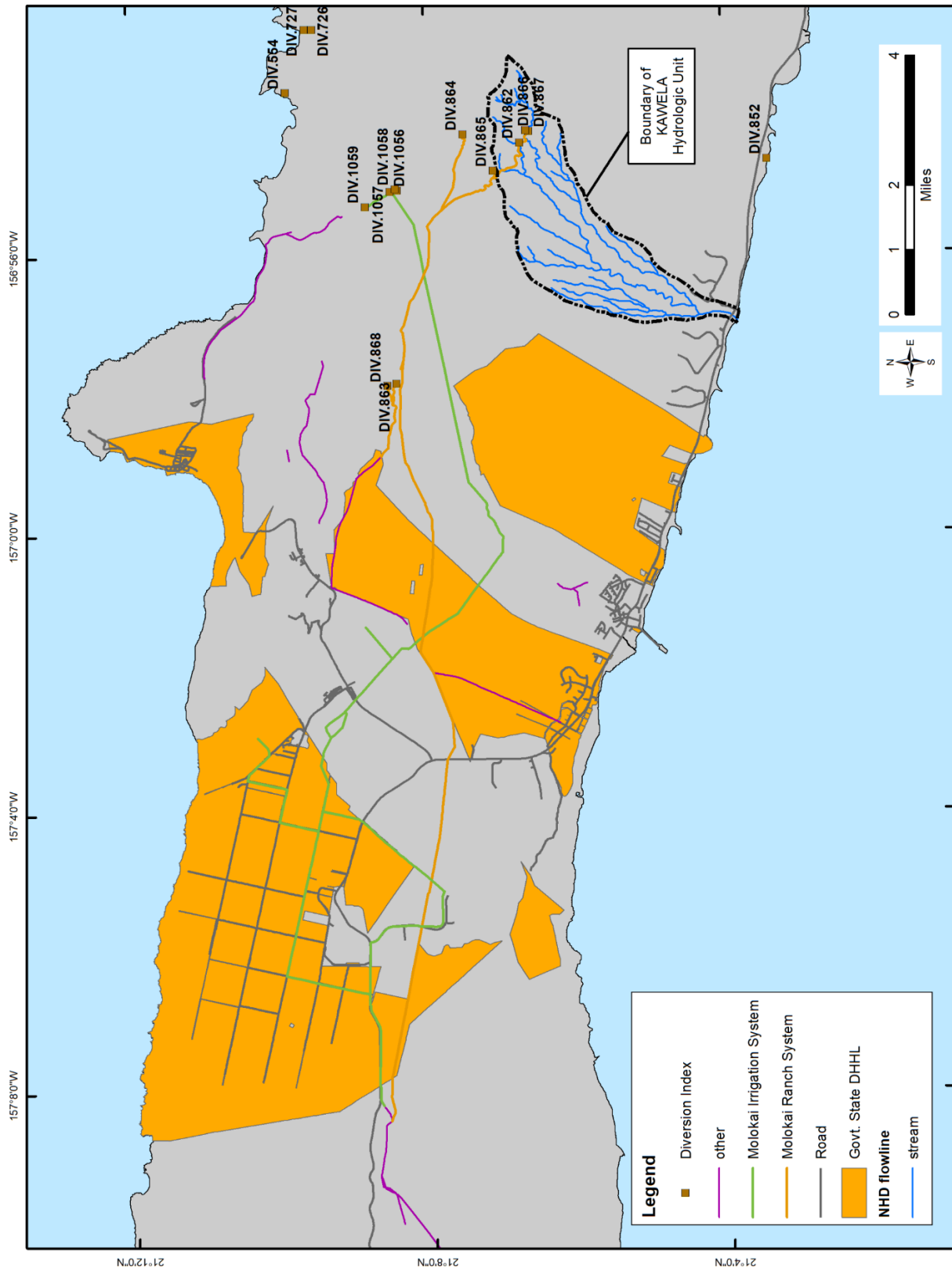
The State Legislation has clarified that lessees of the Hawaiian Homes Commission receives priority usage from the MIS and that two-thirds of the diverted water would be distributed to DHHL beneficiaries for domestic and agricultural uses. In the 2017 State Water Projects Plan (SWPP) Update, Ho'olehua and Kalama'ula tracts are primarily zoned agriculture and rural, with an existing potable water demand of 0.635 mgd. Some demand is met with water from the Maui DWS system. The 2017 SWPP update projected a 0.6338 mgd potable water demand for the two tracts by 2021 and 0.7926 mgd potable water demand for long-range planning.

¹¹ State of Hawaii, 1966.

¹² PBR Hawaii, 2004. Maui Island Plan: Prepared for State of Hawaii, Department of Hawaiian Home Lands, 340 p.

¹³ State of Hawaii. 1966.

Figure 12. Location of DHHL parcels in Central Molokai



A substantial amount of non-potable water is needed to meet the reasonable needs of DHHL. This demand can be met with water from the MIS, an unused non-potable system that diverts water from Waihanau, or water from the Mountain Water System. In the 2004 Update to the Agriculture Water Use and Development Plan, the MIS served approximately 235 customers with a mean daily non-potable demand of 3.353 mgd.

To service the Kalama'ula tract, the MIS would have to be expanded and additional sources or conservation measures identified. The long-term estimated non-potable water demand was 5.3599 mgd for Ho'olehua and 0.7316 mgd for Kalama'ula resulting in a total demand for the region of 6.0914 mgd.

CONSIDERATIONS OF RECOMMENDED ACTIONS FOR NON-INSTREAM WATER USE

1. Mountain Water System diversion abandonments

The abandonment of diversions that have been inactive for many (15+) years will not affect the existing or planned uses of non-potable water by Molokai Properties.

2. East Kawela Interim IFS

Molokai Properties existing non-potable water use is approximately 42,000 gpd. There is a maximum of 33,000 gpd of water lost due to evaporation from interconnected reservoirs. This results in approximately 75,000 gpd existing non-potable water use. There is approximately 90,000 gpd existing non-potable needs in Kaluako'i (currently met with potable water from Well 17). If these needs are met with non-potable water, staff estimates Molokai Properties has a future non-potable water demand of approximately 165,000 gpd. The Mountain Water System has a total active reservoir capacity of approximately 50 million gallons. At 50% of capacity, the reservoirs can provide approximately 333 days of storage at current use rates and 151 days of storage at future planned use rates, without additional inflow from streams. At 80% of capacity, the reservoirs can provide approximately 533 days of storage at current use rates and 242 days of storage at future planned use rates, without additional inflow from streams.

The estimated Q_{50} and Q_{90} streamflow duration available at all streams at the mountain water system intakes are 1.033 cfs (0.667 mgd) and 0.218 cfs (0.141 mgd), respectively. From 2000 to 2002, the Q_{50} and Q_{90} total diverted flow from East Kawela, Hanalilolilo, Kalihi and Lualohe intakes was 0.93 cfs (0.60 mgd) and 0.54 cfs (0.35 mgd), respectively, with a mean of 1.07 cfs (0.69 mgd).

Currently (2019 to 2021), diversion 862 on the West Kawela, diversion 866 on the East Kawela Tributary, diversion 865 (Kamoku intake) on a tributary to the SF Kaunakakai Stream, and diversions 863 (Lualohe intake) and 868 (Kalihi intake) on tributaries of the SF Kuhuaawi Stream in the Manuwainui hydrologic unit, are not active and have not been since 2005. This has resulted in a Q_{50} and Q_{90} total diverted flow of 0.58 cfs (0.37 mgd) and 0.04 cfs (0.02 mgd), respectively, and a mean diverted flow of 0.58 cfs (0.37 mgd) for the 2019 to 2021 period.

The current (2019-2021) daily rate of water diverted (mean of 370,000 gpd) is approximately 9x the amount used (42,000 gpd) and approximately 5x the amount (75,000 gpd) needed to meet these uses (assuming 33,000 gpd of evaporative loss). An interim IFS of 0.19 cfs (0.12 mgd;

120,000 gpd) below the East Kawela intake provides for continual downstream flow below diversion 867 to support recognized instream uses and groundwater recharge. The interim IFS will affect Molokai Properties ability to divert low flows during the dry season (Figure 13), but there is ample reservoir storage which can be accumulated during higher flows. Further, additional water may still be available at the Kamoku intake. Molokai Properties will be able to continue to meet all their present (75,000 gpd) non-potable water needs 100% of the time. With the availability of approximately 50 million gallons of storage, Molokai Properties will be able to meet their future (165,000 gpd) non-potable water needs 100% of the time.

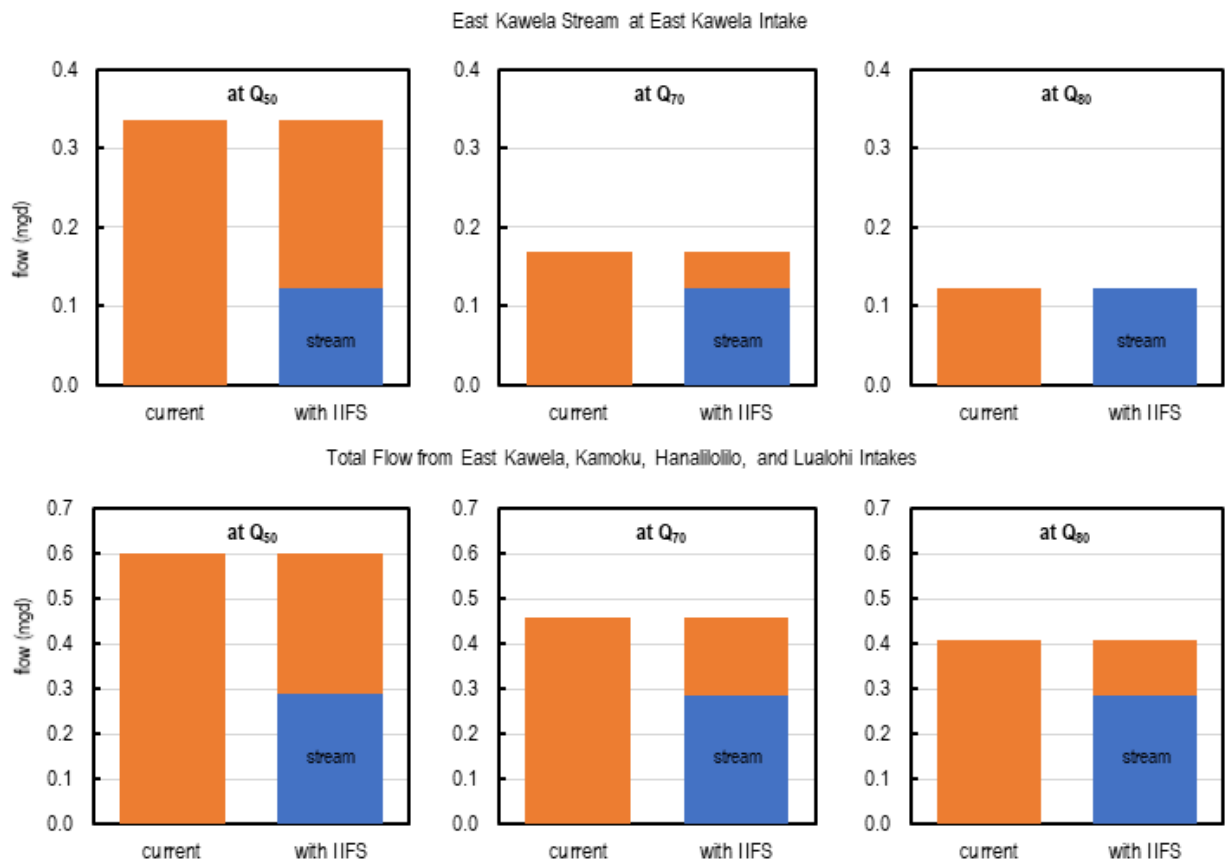
The consequences of the actions proposed in this submittal results in a volume of water available for off stream usage that will continue to meet the existing and proposed reasonable future demand as detailed in Table 8.

- The interim IFS proposed will protect instream public trust uses including water in its natural state needed to support endangered damselflies and riparian plants, groundwater recharge, domestic uses, and water for traditional and customary practices in the Manawainui, Kaunakakai, and Kawela hydrologic units while providing for non-instream public trust uses of water.
- The interim IFS proposed also provides a sufficient volume of water for off-stream uses that are reasonable and beneficial uses in the public interest, including making water available for agriculture, industrial uses, and public trust uses by the Department of Hawaiian Home Lands.
- The actions proposed in this submittal will improve instream flows and groundwater recharge that supports cultural and ecological systems along the coast.
- The Commission recommends that improvements to reduce reservoir evaporation should be made if additional water is required.

Table 9. Mean daily flow and low-flow duration statistics for non-instream water availability for current conditions (water from East Kawela, Hanalilolilo, Lualohe, Kalihi intakes) and with recommended abandonment of the Kalihi Intake, the Lualohe interim IFS, East Kawela interim IFS proposed actions for non-instream water use. [note: does not consider the banking of excess water diverted during flows greater than Q₅₀ and stored in reservoirs or water available from the currently unused Kamoku intake]

Diverted flows (but without Kamoku, West Kawela, or East Kawela Trib)	Current conditions (gpd)	Abandonment of Kalihi Intake (gpd)	With 24,000 gpd Lualohe Interim IFS	With 120,000 gpd East Kawela Interim IFS
Mean	690,000	636,927	612,927	492,927
Q ₅₀	601,000	589,000	565,000	445,000
Q ₇₀	460,000	452,000	428,000	308,000
Q ₈₀	408,000	401,000	377,000	257,000
Q ₉₀	350,000	349,000	325,000	205,000
Non-potable uses	% of time uses met with (without including available system storage)			
Current demand (75,000 gpd)	100%	100%	100%	100%
Future demand (165,000 gpd)	100%	100%	100%	100%

Figure 13. Currently (2000-2005) diverted flow from East Kawela, Hanalilolilo, Kalihi, and Lualohei intakes and diverted flow with implemented recommendations for interim IFS and diversion abandonment.



RECOMMENDED ACTIONS:

Based on the above, and all applicable authority, the Commission staff make the following recommendations:

1. PROPOSED ACTION: INTERIM IFS ON EAST KAWELA STREAM

- Staff recommends an interim IFS of a mean daily flow of 0.19 cfs (0.12 mgd) below the intake on East Kawela Stream at diversion 867. This flow approximately represents the Q_{80} flow at USGS 16415000 above the intake. The interim IFS will support the outstanding or substantial recreational, ecological, and cultural resources present in Kawela Stream, including supporting habitat for threatened or endangered damselfly species, amphidromous aquatic biota, and ecologically and culturally important riparian species present in East Kawela Stream. The interim IFS will also improve ma uka to ma kai surface water connectivity and groundwater recharge supporting coastal spring flow critical for cultural and ecological systems.

IMPLEMENTATION

- Staff recommends that the release valve on the intake pipeline be modified with a meter to measure the flow rate of water returned to the stream at the intake.
- Molokai Properties will submit a plan for modifying the outflow to be considered by Commission staff within 90 days of Commission action.

MONITORING

- Molokai Properties will report the metered flow returned to the stream and staff will measure streamflow as necessary to ensure compliance.
- Staff will work with Molokai Properties and the community to verify that the interim IFS is being met

ENFORCEMENT

- Staff recommends that the interim IFS be met at all times. If insufficient water is available to meet the interim IFS as measured at USGS station 16415000, then no water shall be diverted at diversion 867.

2. PROPOSED ACTION: INTERIM IFS ON LB SF KAUNAKAKAI STREAM AT KAMOKU INTAKE

- Staff recommends an interim IFS of a mean daily flow of 0.011 cfs (0.007 mgd) below the Kamakou Intake at diversion 865 on the Left Branch of the South Fork of Kaunakakai Stream. This flow approximately represents the Q_{80} flow above the intake. The interim IFS will support the habitat for endangered damselfly species and riparian vegetation present in Kaunakakai Stream important for traditional and cultural practices as well as aesthetic and recreational values.

IMPLEMENTATION

- Staff recommends that the diversion be modified such that the intake pipeline only diverts flow greater than the interim IFS at diversion 865.

- Molokai Properties will submit a plan for modifying the outflow to be considered by Commission staff within 90 days of Commission action.

MONITORING

- Molokai Properties will report the metered flow diverted from the stream and staff will measure streamflow as necessary to ensure compliance.
- Staff will work with Molokai Properties and the community to verify that the interim IFS is being met.

ENFORCEMENT

- Staff recommends that the interim IFS be met at all times. If insufficient water is available to meet the interim IFS as measured at the index station on East Kawela at USGS station 16415000 (i.e., when mean daily flow drops below the Q_{80} flow at USGS 16415000), then no water shall be diverted at diversion 865.

3. PROPOSED ACTION: INTERIM IFS ON SF KUHUAAWI AT LUALOHE INTAKE

- Staff recommends an interim IFS of a mean daily flow of 0.012 cfs (0.008 mgd) below the Lualohe intake at diversion 863 on SF Kuhuaawi Stream. This flow approximately represents the Q_{80} flow above the intake. The interim IFS will provide high quality habitat for endemic threatened or endangered damselflies, promote the aesthetic and recreational values of the stream, and support culturally and ecologically important riparian plants.

IMPLEMENTATION

- Staff recommends that the diversion be modified such that the intake pipeline only diverts flow greater than the interim IFS at diversion 863.
- Molokai Properties will submit a plan for modifying the outflow to be considered by Commission staff within 90 days of Commission action.

MONITORING

- Molokai Properties will report the metered flow diverted from the stream and staff will measure streamflow as necessary to ensure compliance.
- Staff will work with Molokai Properties and the community to verify that the interim IFS is being met.

ENFORCEMENT

- Staff recommends that the interim IFS be met at all times. If insufficient water is available to meet the interim IFS as measured at the index station on Waihanau at USGS station 16409000 (i.e., when mean daily flow drops below the Q_{80} flow), then no water shall be diverted at diversion 863.

4. PROPOSED ACTION: ABANDONMENT OF STREAM DIVERSION 866 EAST KAWELA TRIBUTARY

- Staff recommends that diversion 866 (East Kawela Tributary intake) be formally abandoned and all associated piping be removed as required by the Commission to provide high quality habitat for endemic threatened or endangered damselflies, promote

the aesthetic and recreational values of the stream, increase the available habitat for endemic amphidromous fish, and support culturally and ecologically important riparian plants.

IMPLEMENTATION

- Molokai Properties will submit the Stream Diversion Works Permit for abandonment to be considered by Commission staff within 90 days of Commission action.

5. PROPOSED ACTION: ABANDONMENT OF STREAM DIVERSION 862 WEST KAWELA STREAM

- Staff recommends that diversion 862 (West Kawela Intake) be formally abandoned and all associated piping be removed as required by the Commission to provide high quality habitat for endemic threatened or endangered damselflies, promote the aesthetic and recreational values of the stream, increase the available habitat for endemic amphidromous fish, and support culturally and ecologically important riparian plants.

IMPLEMENTATION

- Molokai Properties will submit the Stream Diversion Works Permit for abandonment to be considered by Commission staff within 90 days.

6. PROPOSED ACTION: ABANDONMENT OF STREAM DIVERSION 868 ON SF KUHUA AWI AT KALIHI INTAKE

- Staff recommends that diversion 868 (Kalihi Intake) be formally abandoned and all associated piping be removed as required by the Commission to provide high quality habitat for endemic threatened or endangered damselflies.

IMPLEMENTATION

- Molokai Properties will submit the Stream Diversion Works Permit for abandonment to be considered by Commission staff within 90 days.

Ola i ka wai,



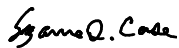
M. KALEO MANUEL
Deputy Director

Exhibits:

1. Map of central Molokai with the Molokai Mountain System and Molokai Irrigation System identified.
2. February 15, 2022, Staff Submittal C1, Informational briefing and draft recommendations (*available online*)
<https://files.hawaii.gov/dlnr/cwrm/submittal/2022/sb20220215C1.pdf>

3. List of Site Visits by Commission Staff to Waikolu, Kawela, Kaunakakai, and Manawainui hydrologic units.
4. June 25, 2002 Commission letter to Molokai Ranch regarding water use reporting for the Molokai Ranch Mountain System
5. July 11, 2002 response from Molokai Ranch
6. July 1, 2019 CDR.5310.4 Earthjustice Petition and Declaratory Order Against Waste (*available online*)
<https://files.hawaii.gov/dlnr/cwrn/submittal/2022/sb20220215C1Ex5.pdf>
7. March 3, 2020 Molokai Properties Response to CDR.5310.4 (*available online*)
<https://files.hawaii.gov/dlnr/cwrn/submittal/2022/sb20220215C1Ex6.pdf>
8. February 3, 2021 Commission letter request for information to Molokai Properties
9. April 12, 2021 response from Molokai Properties (*available online*)
<https://files.hawaii.gov/dlnr/cwrn/submittal/2022/sb20220215C1Ex8.pdf>
10. July 8, 2021 Commission letter request for information to Molokai Properties
11. October 14, 2021 response from Molokai Properties
12. February 15, 2022 , Staff Submittal C1, Presentation (*available online*)
<https://files.hawaii.gov/dlnr/cwrn/submittal/2022/sb20220215C1P.pdf>
13. February 15, 2022 , Staff Submittal C1, Testimony (*available online*)
<https://files.hawaii.gov/dlnr/cwrn/submittal/2022/sb20220215C1T.pdf>

APPROVED FOR SUBMITTAL:



SUZANNE D. CASE
Chairperson

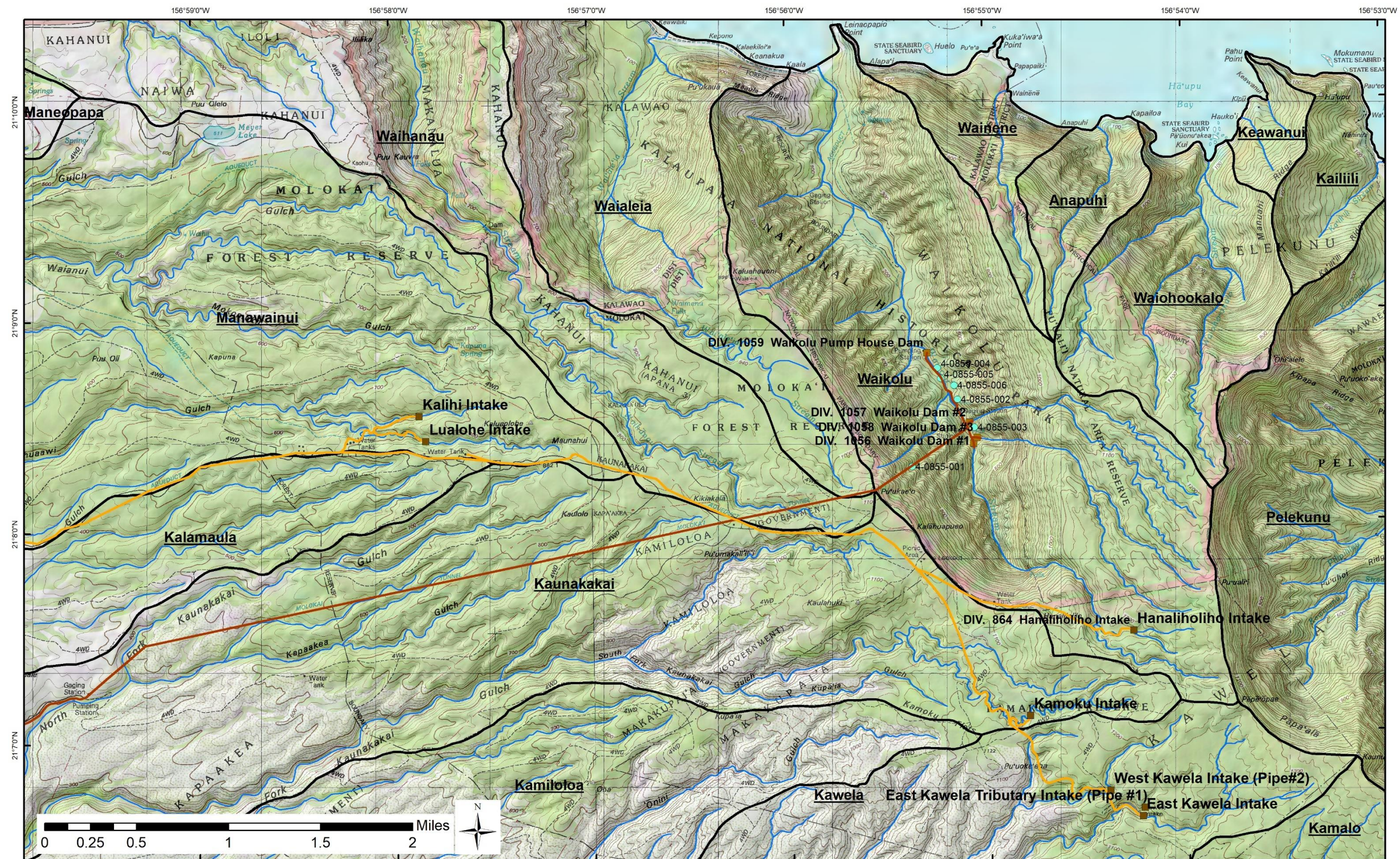


EXHIBIT 3

List of site visits by Commission Staff to Waikolu, Kawela, Kaunakakai, and Manawainui hydrologic units.

Date	Hydrologic Unit
05/02/2016	Kawela
05/03/2016	Waikolu, Kaunakakai
05/04/2016	Manawainui
03/01/2017	Kawela
08/29/2017	Waikolu
08/30/2017	Waikolu
08/31/2017	Waikolu
10/05/2017	Kawela
10/06/2017	Waikolu
01/17/2018	Kawela
08/31/2018	Kawela
09/02/2018	Kawela
09/24/2018	Waikolu
03/29/2019	Kawela
04/17/2019	Waikolu
05/20/2019	Waikolu
08/26/2019	Waikolu
04/25/2020	Waikolu
07/15/2020	Waikolu
09/17/2020	Waikolu
11/19/2020	Waikolu
05/27/2021	Waikolu
07/25/2021	Kawela
07/26/2021	Manawainui
01/21/2022	Waikolu
01/22/2022	Kawela, Kaunakakai
02/27/2022	Manawainui, Kaunakakai, Kawela

March 15, 2022

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON

BRUCE S. ANDERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

June 25, 2002

Mr. Harold Edwards
Moloka'i Ranch, Ltd.
745 Fort Street, #600
Honolulu, HI 96813

Dear Mr. Edwards:

Moloka'i Ranch Mountain System
Diversion Records

The Commission is beginning a process to gather information toward setting an interim instream flow standard for Waikolu Stream. One of the tributaries is Hanalilolilo Stream, which you divert. While the flows may seem minor, they should be noted for the record.

In reviewing our records, we find two matters standing in the way of understanding the importance of this diversion. First, your reporting is 28 months in arrears, a matter that should be addressed at your earliest opportunity. Reportage is required under the Water Code, and delinquency may be a violation subject to fines of up to \$1000 per day.

Second, your letter of May 14, 1997 indicates that Hanalilolilo Stream would be separately gaged, but the records submitted to date show it lumped together with East and West Kawela intakes. We understand that the pipeline to Hanalilolilo intake is being replaced, and that perhaps the gaging can now be upgraded. Please provide us with an update of the activities on this project.

Please respond to this letter within thirty (30) days.

If you have any questions, please contact Charley Ice of the Water Commission staff at 587-0251.

Sincerely,

A handwritten signature in black ink, appearing to read "Linnel T. Nishioka".

LINNEL T. NISHIOKA
Deputy Director

CI:ss

Status of Molokai Mountain System Allegation of Waste and Amended IIFS

March 15, 2022



MOLOKAI RANCH

12 10 : 46

July 11, 2002

Ms Linnel Nishioka
Deputy Director
COMMISSION ON WATER RESOURCE MANAGEMENT
P O Box 621
Honolulu, Hawaii 96809

Re: Molokai Ranch Mountain System Diversion Records

Please find enclosed records for our stream diversions which we had inadvertently not forwarded to your office. As indicated by the data we were successful in installing a new flow meter for the Hanoliholiho Intake in April 2000 and are now developing regular water use data for this diversion.

We regret our oversight in not reporting these flows. Should you have any further questions, please do not hesitate to have your staff call me at 534-9509.

Very truly yours,

MOLOKAI RANCH, LIMITED



Harold Edwards
Senior Vice President
Development Division

HE:ky
Enclosure

See report page 7.

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

SUZANNE D. CASE
CHAIRPERSON

KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

February 3, 2021

CERTIFIED MAIL
RETURN-RECEIPT REQUESTED

Ref: CDR.5310.4

Calvert Chipchase
Cades Schutte LLP
1000 Bishop Street, Suite 1200
Honolulu, HI 96813

Aloha Mr. Chipchase:

Thank you for submitting your Complaint / Dispute Resolution Response Form (Response), dated March 23, 2020, to the Commission on Water Resource Management (Commission) addressing the Complaint (CDR.5310.4) filed by Earthjustice on behalf of Moloka'i Nō Ka Heke.

Commission staff have some follow up data requests from Molokai Properties Limited (MPL) to move forward with an analysis of the Complaint. Please prepare your responses to the Commission by Friday, March 5, 2021.

1. As stated in the Response, in 2014 MPL resumed in-house operations of cattle ranching on MPL properties. Can MPL provide to the Commission:
 - a. the acreage of land used by year for ranching;
 - b. the number of head of cattle for that acreage by year;
 - c. the purpose of those cattle (e.g., calf breeding to export for finishing on mainland, local beef production);
 - d. the number of animals bought or sold per year; and
 - e. the grazing management plan MPL utilizes.
2. The interconnection between the MWS and Well 17 as well as the MPL water treatment facility allows for MWS to meet the potable water needs of the MPL utilities. Can you provide a breakdown to the Commission of:

Mr. Calvert Chipchase
February 3, 2021
Page 2

- a. the PUC-defined service area for the potable and non-potable water systems;
 - b. a map of the water distribution system (e.g., pipelines and reservoirs) that services that area; and
 - c. the monthly metered water use (potable and non-potable) for each sub-area as stated in your response (e.g., West Moloka'i, Kipū, Kualapu'u, Manawainui).
3. In the response, MPL states that they "continue to lease lands and properties for livestock, agricultural, and other uses". Can MPL provide for each lease:
 - a. the acreage, tax map key number, usage (e.g, diversified agriculture, aquaculture, seed corn, livestock grazing), and the duration of the lease; and
 - b. the potable and non-potable water usage.
4. The interconnection between the MPL Mountain Water System (MWS) and the Moloka'i Irrigation System (MIS) allows for excess surface flow not needed by the MPL utilities to flow into the MIS for storage. Understanding that the return connection between the MIS and the MPL utility system was disconnected on November 26, 2018, can MPL provide since 1980:
 - a. the gaged monthly volume of water from the MWS flowing into the MIS; and
 - b. the gaged monthly volume of water delivered from the MIS to MPL utilities up until November 26, 2018.
5. Further explanation why the MWS is not an alternative to non-potable needs (like landscaping and irrigation) as listed in ground water use permit 1089.

Thank you for your attention to this matter. If you have any questions or need clarification on these questions, please contact Dean Uyeno of our Stream Protection and Management Branch at (808) 587-0234 or by email at dean.d.uyeno@hawaii.gov.

Ola i ka wai,



M. KALEO MANUEL
Deputy Director

cc: Earthjustice, on behalf of Moloka'i Nō Ka Heke

March 15, 2022

DAVID Y. IGE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

SUZANNE D. CASE
CHAIRPERSON

MICHAEL G. BUCK
ELIZABETH A. CHAR, M.D.
NEIL J. HANNAHS
AURORA KAGAWA-VIVIANI, PH.D.
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL

July 8, 2021

Ref: CDR.5310.4

Calvert Chipchase
c/o Cades Schutte LLP
1000 Bishop Street, Suite 1200
Honolulu, HI 96813

Aloha Mr. Chipchase:

Thank you for submitting responses on behalf of Molokai Properties Limited (MPL) dated April 12, 2021 for the request for information dated February 3, 2021 as part of the fact finding necessary for staff at the Commission on Water Resource Management to evaluate the merits of the Complaint/Dispute Resolution (CDR.5310.4) filed by Earthjustice on behalf of Moloka'i Nō Ka Heke.

Commission staff have some follow up questions and data requests to clarify the initial responses dated April 12, 2021 from MPL to move forward with an analysis of the complaint. Please prepare your responses to the Commission by August 7, 2021.

Commission staff requests answers to the following questions as of June 2021:

1. The provided map identified as map 2 is dated 01/20/2016 and labeled as "Proposed Water Facilities Plan". Can you identify what has been constructed by June 2021 and what is still "proposed"? In the same referenced map, there is a "new" pipeline from well 17 to the Kaluakoi pipeline. Is this proposed pipeline in addition to the existing non-potable pipeline that connects the mountain water system to Kaluakoi? Where exactly does this pipeline start and stop?
2. Is the Dole pipeline from Kalihi and Lualohe stream diversions still connected to the Molokai Irrigation System?
3. Is the Molokai Irrigation System still interconnected to the non-potable pipeline to Kaluakoi at Mahana?
4. Does the Mahana non-potable pump facility continue to operate?
5. Is the mountain water system still connected to the pipeline to Kaluakoi pipeline?


Calvert Chipchase
July 8, 2021
Page 2

6. The non-potable water use data from the Puunana Master meter previously provided by MPL includes the totality of water used for Maunaloa Town, Kaluakoi Lodge and Camp, and parks as well as the ranch operations. Please provide a detailed description of the water use not part of the Molokai Ranch ranching operations, such as people served by TMK, landscape or crop irrigation type and acres, and estimated usage (and description) by Maunaloa lodge, camp, and parks that are not individually metered. Please clarify the calculated demand for existing (versus future) uses, acres irrigated, and domestic demand? Does MPL irrigate any fields for forage for cattle?

7. Some of MPL's lessees have cattle ranching operations. How many head of cattle are in each of the lessee's parcel(s)? If exact annual data are not available, what is the maximum number of head? What is the carrying capacity of head of cattle per acre for their specific parcels?

8. Explain why the mountain water system is not a viable alternative to meet the non-potable needs for Kaluakoi in the current water use application for well 17. Could water from both well 17 and the mountain water system be transmitted to West Molokai (Maunaloa/Kaluakoi)?

Ola i ka wai,



M. KALEO MANUEL
Deputy Director

cc: Molokai Properties Ltd.

March 15, 2022

October 14, 2021

Calvert G. Chipchase
Cades Schutte Building
1000 Bishop Street, Suite 1200
Honolulu, Hawai'i 96813-4212
Direct Line: (808) 521-9220
Direct Fax: (808) 540-5021
Email: cchipchase@cades.com

BY HAND DELIVERY

M. Kaleo Manuel
Deputy Director
Commission on Water Resource Management
1151 Punchbowl Street, Suite 227
Honolulu, Hawai'i 96813

Re: CDR 5310.4

Dear Deputy Director Manuel:

On behalf of Moloka'i Properties Ltd. ("MPL"), I write in response to the letter from the Commission on Water Resource Management (the "**Commission**") dated July 8, 2021, which requested additional information from MPL regarding its Response to the Complaint (CDR 5310.4) dated March 23, 2020 and its Response to the Commission's Request for Information dated April 12, 2021. The Commission's questions and MPL's responses are set out below.

1. The provided map identified as map 2 is dated 01/20/2016 and labeled as "Proposed Water Facilities Plan". Can you identify what has been constructed by June 2021 and what is still "proposed"? In the same referenced map, there is a "new" pipeline from well 17 to the Kaluakoi pipeline. Is this proposed pipeline in addition to the existing non-potable pipeline that connects the mountain water system to Kaluakoi? Where exactly does this pipeline start and stop?

Response:

The pipelines identified as "proposed" on Map 2 (Ex. 3 to MPL's Response to the Commission's Request for Information dated April 12, 2021) are a part of MPL's 2016 water facilities upgrade project. They were installed prior to June 2021.

The "new" potable pipeline from Well 17 was also installed prior to June 2021. The line services customers in Manawainui, Maunaloa and Kaluakoi.

The Mountain Water System ("MWS") is not connected to Kaluakoi.

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2. Is the Dole pipeline from Kalihi and Lualohe stream diversions still connected to the Molokai Irrigation System?

Response:

The Kalihi and Lualohe stream diversions are not connected to the Molokai Irrigation System ("MIS"). The diversions are a part of the MWS, but they are not currently active.

3. Is the Molokai Irrigation System still interconnected to the non-potable pipeline to Kaluakoi at Mahana?

Response:

The MIS was physically disconnected from the pipeline to Kaluakoi on November 26, 2018.

4. Does the Mahana non-potable pump facility continue to operate?

Response:

The Mahana non-potable pump station operates daily and pumps the MWS water to the open reservoir at Puunana. From there, the water is gravity-fed to livestock and agricultural operations on West Moloka'i.

5. Is the mountain water system still connected to the pipeline to Kaluakoi pipeline?

Response:

The MWS is not connected to the Kaluakoi pipelines, as the latter deliver only potable water. No non-potable pipeline services Kaluakoi. Kaluakoi customers are serviced with water from Well 17, which is transmitted by a potable water system that includes the Kaluakoi pipelines.

6. The non-potable water use data from the Puunana Master meter previously provided by MPL includes the totality of water used for Maunaloa Town, Kaluakoi Lodge and Camp, and parks as well as the ranch operations. Please provide a detailed description of the water use not part of the Moloka'i Ranch ranching operations, such as people served by TMK, landscape or crop irrigation type and acres, and estimated usage (and description) by Maunaloa lodge, camp, and parks that are not individually metered. Please clarify the calculated demand for existing (versus future) uses, acres irrigated, and domestic demand? Does MPL irrigate any fields for forage for cattle?

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Response:

We would like to clarify as follows:

- a. There is no lodge or camp in Kaluakoi. There is a resort, known as "Kaluakoi Resort" in Kaluakoi, which includes Kaluakoi Hotel and an adjoining golf course.
- b. There is a lodge and three tentalow camps (Paniolo, Kolo and Kaupoa) in Maunaloa. We believe the Commission's inquiry regarding "Kaluakoi Lodge and Camp" is in relation to the lodge and tentalow camps in Maunaloa and respond accordingly below.

The Puunana Master meter tracks surface water use on MPL's properties located in Maunaloa and on the west end of Moloka'i. Unless surface water is being used by a third-party or lessee of MPL, the use is not tracked by separate meters.

Surface water measured from the Puunana meter is used for livestock, irrigation, and hunting. The Aeronautical Radio, Inc. site, located at TMK 5-1-002:035, averages 29 kgal annually and uses the water for restrooms and other facilities. Molokai Land Trust, located at TMK 5-1-002:060, averages 39 kgal annually and uses the water for agriculture. Puunana House is currently vacant, so there is no usage. Sakugawa and Sons (TMKs 5-1-2:1, 5-1-2:32 – :35) averages 2.28 MG kgal annually and uses the water for its livestock operations.

The Lodge, three tentalow camps and parks in Maunaloa were serviced with surface water, but are now closed and do not use water.

Maunaloa Town has not been and is not presently serviced with surface water.

Kaluakoi Hotel has been and continues to be serviced with only potable water. Although the hotel is closed, water is required for the maintenance of the property and the continuing use of a small portion of the property. The adjoining golf course was previously serviced with a combination of potable water and re-used water from the Kaluakoi WWTP, but is now closed and no longer uses any water.

MPL has updated Exhibit 4 to MPL's Response to the Commission's Request for Information dated April 12, 2021 with the above-information, which is enclosed as Exhibit 4-A.

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With regard to MPL, MPL has commenced installation of infrastructure and equipment for the irrigation of its pastures to improve and restore forage for its cattle. MPL identified six paddocks (located on TMKs 5-1-2:24 and 5-1-2:23) that will receive irrigation for the purpose of its cattle operations. The total area of the six paddocks is 270 acres.

Approximately 27 kgals are necessary to irrigate one acre-inch. Thus, the irrigation of MPL's six paddocks, totaling 270 acres, will require approximately 65 MG for a three-month period, which should provide sufficient time to establish grass. MPL notes that irrigation rates are inversely related to rainfall and available surface water volumes from the MWS.

7. Some of MPL's lessees have cattle ranching operations. How many head of cattle are in each of the lessee's parcel(s)? If exact annual data are not available, what is the maximum number of head? What is the carrying capacity of head of cattle per acre for their specific parcels?

Response:

Records of annual head counts for MPL's lessees' cattle ranching operations have not been kept by MPL.

MPL estimates carrying capacities between 5-10 acres/head for its pastures, but this estimate is highly dependent on terrain and conditions. The current drought conditions have led to much lower carrying capacities for all pastures.

MPL's pasture-lessee Sakugawa and Sons advised MPL that they have averaged approximately 400 cows over the past 10-year period, resulting in an average carrying capacity of 10 acres/head. The ongoing drought conditions have left them at a historic low; they are presently carrying only 150 cows.

Increases in herd sizes are dependent on improved weather patterns, and restoration of the damage caused by the on-going drought and destruction from the excessive feral deer populations.

New pasture leases may be added once the drought ends and the pastures recover.

8. Explain why the mountain water system is not a viable alternative to meet the non-potable needs for Kaluakoi in the current water use application for

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well 17. Could water from both well 17 and the mountain water system be transmitted to West Molokai (Maunaloa/Kaluakoi)?

Response:

Both potable water from Well 17 and surface water from the MWS are transported to Maunaloa, each via a separate water system. Only potable water from Well 17 is transported to Kaluakoi. Kaluakoi's irrigation needs have never been determined. Infrastructure to transport non-potable water to Kaluakoi is not in place, and even if such infrastructure were in place, it is unclear whether the surface water volume from the MWS would sufficiently meet Kaluakoi's irrigation needs.

Please let us know whether the Commission requires further information. We are also available to meet in-person or by remote. We continue to look forward to participating in all proceedings related to the Complaint.

Very truly yours,

Calvert G. Chipchase
for
CADES SCHUTTE
A Limited Liability Law Partnership

Enclosure

cc: Client
Earthjustice (on behalf of Moloka'i Nō Ka Heke)

Non-Potable Water
Monthly Metered Use

Act No.	Book No.	Customer	TWK No.	Annual Totals					Historical Use	Present Use	Comments	
				2016	2017	2018	2019	2020				Jan 2021
West Molokai												
1600	6	Puunana House		0	0	0	0	0		Irrigation	None	
1700	6	Molokai Land Trust	5-1-002.060	27	42	55	48	22	37	Agriculture	Agriculture	No activity. Tenant terminated service on 6/21/18.
n/a	n/a	Sakigawa & Sons	5-1-2-15-1-2-32 - 35	2,594	2,388	2,063	2,782	1,592	56	Livestock	Livestock	
n/a	n/a	ARInc.	5-1-002.035	25	32	35	15	40	0	Restrooms/Facilities	Restrooms/Facilities	
n/a	n/a	MPL Cattle		35,718	26,793	25,905	30,590	32,280	2,603			Master meter to Puunana
n/a	n/a	Maunaloa LS (Camps, Parks, Lodge)		No Data	No Data	No Data	No Data	No Data	No Data			Closed and do not use water.
n/a	n/a	Puunana WTP		No Data	No Data	0	0	0	0			MWS and M/S mixed. WTP placed in stand-by on 12/27/17